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## SHERARD OSBORN.

SHERARD OSBORN is lost to us. We may no longer be guided by his advice, nerved to fresh efforts by his enthusiasm, nor cheered by his kind and genial counsels. Henceforward the memory of his brave deeds and wise thoughts will be all that is left to us. But this is much. The example of such a man's life is a legacy which will serve our needs, and which will be a boon to future generations. It will not soon be forgotten. It will live in the traditions handed down by those who have served with him in all ranks of life, and in the pages of his books. His ruling passion through life was love for and devotion to his profession, and all his efforts were centred on the advancement of the interests of the navy in the broadest and most liberal sense. He laboured, both with pen and sword, to secure the efficiency of the navy in time of war; ever taking the lead in promoting all improvements, from the time when he studied gunnery in the 'Excellent' thirty years ago, to the last week of his life when he aided the Duke of Somerset in the preparation of his speech on breech and muzzle-loading guns. But Osborn always felt that the navy had other work than fighting, and that in a long peace her usefulness should be even greater and more lasting than during a period of war. It was his aim to find noble and worthy employment for our naval officers and seamen in time of peace. He maintained that they should take a lead in great enterprises for the benefit of commerce, in surveying, and above all in daring achievements connected with geographical exploration and discovery. It was this feeling that made Osborn a studious and expert geographer, and which induced him to become so active a member of the Geographical and Hakluyt Societies. His whole heart was wrapped up in his profession, and in working at the glorious task of furthering its interests he became a geographer, a telegraphist, and a politician. Sherard Osborn was endowed with rare gifts. To great ability and power of acquiring knowledge he added very remarkable grasp of mind and quickness of perception. But above all he was a true and large-hearted man, utterly incapable of pettiness in thought or act, unselfish and full of warm and noble sympathies. He not only won the respect and admiration of those who served under him and worked with him, but he earned their love and lasting friendship. His faults were those of a generous and noble nature. As a young man his impetuous zeal often carried him away, and led him to say things which created opposition at the time, and which no one regretted more than himself in after life. But Osborn acquired prudence with advancing age, and the enthusiasm which sometimes overran discretion in his earlier days was guided by caution and kept in due subjection, though still as strong as ever, in after life. His sympathies also became wider and more catholic, and one of the most striking characteristics of his mind was the completeness and fullness with which he entered into the feelings of younger men. His life is one which should be, and surely will be, studied and appreciated by his younger brother officers; for the name of Sherard Osborn is known and respected throughout the navy, and his bright example will encourage many a friendless lad, without influence or interest like himself, to fight the battle of life as Osborn did, and to strive like him, with all his might, to do his duty and advance the interests of his profession.

Sherard Osborn, the son of Lieutenant-Colonel Osborn of the Madras army, was born on the 25th of April 1822. His mother was Eliza, daughter of Sherard Todington, Esq., of Medbourn in Leicestershire; but she died at Boulogne, on December 21st, 1838, and he never saw her after he first went to sea. He received a nomination as first-class volunteer from Captain W. Warren, when he was commissioning the 'Hyacinth,' an 18-gun corvette, and entering the navy on board that vessel, sailed in her for the East Indies early in 1838. Osborn was then in his sixteenth year.

After visiting Bombay and Trincomalee, the 'Hyacinth' reached Singapore on May the 29th, 1838. During the previous monsoon the Malays had driven the Siamese out of Quedah, on the Malacca peninsula, and it was the British policy to restore it to the King of Siam. A plan of the campaign was arranged at Singapore, and the 'Hyacinth' was sent to blockade Quedah and the river Parlis. Captain Warren was lent three lugger-rigged and decked gunboats manned with Malays, to co-operate in the blockade, and young Osborn received command of one of them, the 'Emerald,' on December 8th, 1838. Her armament was an 18-pounder carronade in the bow, and a brass 6-pounder on a pivot on the quarter-deck; and she was manned by a crew of twenty-five stout Malays with a *Serang* or boatswain named Jadee. Thus as a midshipman, and at the age of 16, he took command of his first ship.

It was a proud day for young Osborn. "All was bright and beautiful to me," he says. "Placed, young as I was, in a position of trust and responsibility, enjoying all the sweets of command, and still too

young to feel its anxieties, it was indeed the sunny side of the world that I was then enjoying, and as, with a throbbing pulse and zealous heart, I walked my own quarter-deck, how earnest in all the honesty of youth were my resolutions to deserve well of my profession." It was an exciting and interesting service, chasing piratical *prahus*, hard fighting on shore and up rivers, and many strange adventures. At length, Quedah having been evacuated on the 20th of March 1839, the time came for Osborn to return to the 'Hyacinth,' and he says—"it was not without regret that I bid my crew good-bye; for my first essay as a captain had been a very very happy one; and if ever a set of poor fellows tried to show that the feeling was mutual, it was exhibited in the warm good-bye of Jadee and his swarthy crew." The journal kept during the service in the gunboat was published in 1857, and is one of the best naval books of the present century. Full of pleasant stories and anecdotes and of useful information, *Quedah* is the delight of many a young officer who, like the author, has to struggle up the ladder of naval service. The preface contains a valuable piece of advice. "To a steady habit of journalising," Osborn says, "noting down all he saw, read, or felt, and in spite of defective spelling and worse grammar, still educating himself with his journal, the author is mainly indebted for being able to fight his way up an arduous and emulative profession. This fact he would fain impress upon the younger branches of the Royal Navy; it will cheer and encourage the humble youth who dons the blue jacket, relying on his head and hand to win those honours and that advancement which, in the natural course of things, appear only to have been created for the influential. In practising habits of observation, not only does the officer discover a source of amusement and instruction for himself, but, at some time or other, he may be able to serve his fellow-man, or add, in a humble way, to the fund of human knowledge."

From Singapore the 'Hyacinth' proceeded to China during the first war, and Osborn served at the taking of Canton in 1841. He then joined the 'Clio,' another 18-gun corvette, commanded by Captain Troubridge, and was on shore at the capture of the Woosung batteries and Shanghai on June the 16th, 1842. He was afterwards in the 'Volage,' and returned home in the 'Columbine' in 1843. He was thrice mentioned in the despatches of Commodore Sir Thomas Herbert and Admiral Sir William Parker, and was publicly thanked as a midshipman by Commodore Watson for his services at the capture of Shanghai.

Sherard Osborn passed his examination on the 6th of December 1843, and joined the 'Excellent' as mate, where he passed out, early in 1844, with a first-class certificate as a gunnery officer. He was a messmate, in the 'Excellent,' of several officers who afterwards joined Sir John Franklin's Expedition, Fairholme, Hodgson, Irving, and Des Vœux, to whom he was warmly attached, and these friendships were destined to affect his future career. But in May 1844 he was specially selected as Gunnery Mate of H.M.S. 'Collingwood,' a line-of-battle-ship which was commissioned on the 4th of that month to bear the flag of Admiral Sir George Seymour, on the Pacific Station. The 'Collingwood' was the smartest as well as the happiest ship in the navy of her time. Her captain was the late Admiral Sir Robert Smart. Her commander was the present Admiral H. Broadhead; and, as regards the officers, it is remarkable that, at the present moment, five of the naval squadrons are commanded by old Collingwoods: namely, the East Indian by Admiral Macdonald; the Pacific by Admiral Cochrane, C.B.; the Channel squadron by Admiral Beauchamp Seymour, C.B.; the Flying squadron by Admiral Rowley Lambert, C.B.; and the Australian by Commodore Goodenough. If Sherard Osborn had been spared to take the command in the Mediterranean, which would have been offered to him, he would have made the sixth. As Gunnery Mate, and, after being promoted on the 4th of May 1846, as Gunnery Lieutenant, Osborn brought the drill on board the 'Collingwood' to a remarkably high state of efficiency. With Sir George Seymour the 'Collingwood' visited most of the ports on the west coasts of South America and Mexico, California, the Sandwich and Society Islands. Sir George Seymour had a very complete collection of narratives of voyages in the South Seas, and Osborn had the habit, which he taught to others, of collecting from them all kinds of information likely to be useful to naval officers respecting each port; thus classifying and arranging his materials on correct principles. He was also struck by the magnificence of the South American rivers as great fluvial highways of commerce, and wrote much on the subject. He was a man who never dropped a point entirely in which he once took an interest, however long might be the time during which he was obliged to put it on one side. As regards the Amazon he afterwards actively and liberally assisted in the editing of the voyages of Orellana, Acuña, and Aguirre; and it is remarkable that finally, as Director of the Amazon Steam Navigation Company, he was at last able to realize the dream of his youth, while serving in the Pacific.

Altogether, the four years on board the 'Collingwood' was a period of preparation for important work in after life, and of admirable training. It was also a most happy time, full of enjoyment and pleasure—storing the memory with bright and pleasant thoughts. Of the 'Collingwood,' as of the 'Hyacinth' days, Osborn would quote the lines of Rogers:—

> "Sweet memory! wafted by thy gentle gale,
> Oft up the stream of Time I turn my sail,
> To view the fairy haunts of long-lost hours,
> Blest with far greener shades, far fresher flowers."

The dear old 'Collingwood' was paid off at Portsmouth on the 20th of July 1848, and, after a brief holiday on shore, Osborn was appointed to command the 'Dwarf,' a small steamer for service on the coast of Ireland, during the Smith O'Brien riots. In Ireland he earned the warm approval of the local authorities, and was repeatedly thanked by the Commander-in-Chief. In 1849 his seamanship and gallantry were reported to the Admiralty as "beyond all praise in remaining by his vessel the 'Dwarf,' in a sinking state in tempestuous weather."

But now a matter of deep interest began to absorb all his thoughts, and to call forth the energies of his mind. Sir John Franklin's Expedition had been absent nearly five years, Sir James Ross, who had been sent out in search of it, had returned unsuccessful, and it was urged, in very influential quarters, that Franklin's ships must have gone down in Baffin's Bay,

and that the search should be abandoned. This disgraceful counsel fired the indignation of Sherard Osborn. His whole soul revolted against the shame that would thus be brought upon England, and he saved his country from it. He came forward in the true spirit of chivalry to stand by the cause of his old messmates in the 'Excellent,' of the noble-minded widow of Sir John Franklin, and of his country; and to denounce the false and recreant advice of those who desired to abandon the explorers to their fate. He wrote unceasingly with equal ability and vigour, he inspired others with some of his own enthusiasm, and he gained his point. Before the new year another Arctic search expedition had been decided upon.

Captain Austin's Expedition consisted of four vessels, the 'Resolute' with the 'Pioneer' screw steamer as tender, the 'Assistance,' and the 'Intrepid.' Sherard Osborn was appointed Lieutenant commanding the 'Pioneer' on the 26th of February 1850. He was then in his 28th year.

Captain Austin's Expedition was the most efficient and the happiest that ever entered the Arctic Regions. It was the first in which steam-power was effectively used in ice navigation, the first and only one in which the winter organization was so admirable as altogether to banish sickness, and the first in which the system of sledge-travelling was brought to a high state of efficiency. In all this work Sherard Osborn took a leading share. His steamer was of 400 tons burden and 150 feet long, propelled by a screw with an engine of 60-horse power, and rigged as a three-masted schooner. She carried 300 tons of coal. The crew consisted of thirty souls, of which five were officers. In this steamer Osborn acquired his experience, and it taught him to foresee and to predict a new era in Arctic voyaging. Then all the whalers were sailing vessels. Now every whaler is a powerful screw steamer like the 'Pioneer.'

In the winter quarters his enthusiasm, and his bright and genial disposition added in no small measure to the cheerfulness and zeal of his comrades; and he thus did good service in preparing for the sledge travelling in spring. It is to M'Clintock, the First Lieutenant of the 'Assistance,' that, aided by experience acquired under Sir James Ross, the great credit of conceiving and maturing the system of Arctic sledge-travelling belongs. This was always fully and generously conceded by Sherard Osborn. All the travelling parties started on April 15th, 1851, from the winter quarters off Griffith Island. M'Clintock was away eighty days, and marched over 770 miles. Osborn, leaving the ships with a division commanded by Captain Ommanney, explored as far as the most western point of Prince of Wales Land, and marched 534 miles in fifty-eight days. He gives the greatest credit to the men, whose heroism was beyond all praise. Constant intercourse with them, during this trying journey, did much to raise his opinion of the character and indomitable spirit of our seamen and marines. He said—"On them fell the hard labour, to us fell the honours of the enterprise; yet none excelled the men in cheerfulness and sanguine hopefulness of a successful issue to our enterprise. They had their moments of pleasure too—plenty of them in spite of the cold, in spite of fatigue. There was honest congratulation after a good day's work; there was the time afterthe pemmican had been eaten; and each one, drawing up his blanket-bag around his chin, sat, pannikin in hand, and received from the cook the half gill of grog; and, after drinking it, there was sometimes an hour's conversation, in which there was more hearty merriment, I trow, than in many a palace,—dry witticisms or caustic remarks which made one's sides ache with laughter." Osborn's sledge was christened the "True Blue," his motto was *Nil desperandum.*

The Expedition returned to England in the autumn of 1851, having discovered the first winter quarters of Sir John Franklin's Expedition, but leaving its fate as great a mystery as ever. Osborn disapproved of the return, and urged a renewal of the search with as much energy and chivalrous eloquence as before. He published a charming work containing an interesting and complete account of ice navigation, of winter quarters, and of sledge-travelling, which did much to keep public interest fixed on Arctic matters. It is entitled *Stray Leaves from an Arctic Journal*, and was published by Blackwood, 1852. It aided materially in securing the despatch of another Arctic Expedition.

During the short interval of rest in England, between the return of Austin's and the despatch of Belcher's Expedition, Sherard Osborn was married at Paddington, on the 8th of January 1852, to Miss Helen Harriet Gordon Hinxman, daughter of Mr. John Hinxman of Queen Anne Street, the Navy Agent. By this marriage he had two daughters, who survive him.

In February 1852 the four vessels were again commissioned for another expedition, and once more Osborn received command of the 'Pioneer.' He was promoted to the rank of Commander in 1853. His life-long friend, the present Rear-Admiral George H. Richards, C.B., was his comrade as Commander of the 'Assistance.' With the experience acquired under Captain Austin, the presence of Sherard Osborn in the new expedition was invaluable. He passed two very trying winters up Wellington Channel; and in the sledge-travelling he was away from his ship 117 days, and marched over 1093 miles. His energy and joviality, and his readiness to undertake the hardest labour, if any of his men were distressed in dragging the sledge, won him the devoted attachment of his crew.

On his return home in the autumn of 1854, he had been five summers and three winters in the Arctic Regions; a service which, though severe and trying, was ever looked upon by Osborn as the very best training for officers in time of peace. His health had been somewhat shaken, and for a few months he held the appointment of Commander of the Norfolk District Coast Guard, to recruit. During this interval he undertook the difficult and delicate work of preparing and editing Sir Robert M'Clure's logs and journals for the press; which he performed with admirable tact and literary skill. His ardent hope, which has been well fulfilled, was "that the work might remain as the history of a great event in naval chronicles, and perhaps awaken in the breasts of future Franklins, Parrys, or M'Clures, that love for perilous adventure, which must ever form the most valuable trait in the character of a maritime people." *The Discovery of a North-West Passage by H.M.S. 'Investigator,' Captain R. M'Clure, edited by Captain*

*Sherard Osborn, C.B., from the logs and journals of Captain M'Clure*, was published in April 1856, and has gone through four editions.

But stirring times were now for the navy. The Arctic Expedition returned just as the Crimean War was breaking out, and early in 1855 Sherard Osborn proceeded to the Black Sea, in command of H.M.S. 'Vesuvius.' He assisted Admiral Boxer in restoring order in Balaclava Harbour, and was then sent by Sir Edmund Lyons as senior officer of the blockading squadron off Kertch and the straits of Yenikale. He was present at the capture of Kertch, and succeeded to the command of the squadron in the sea of Azov, consisting of fourteen to eighteen gunboats and despatch vessels. Great stores of provisions for the use of the Sebastopol garrison had been collected at various points along the shores of this inland sea, and Osborn proceeded to destroy them with extraordinary dash and celerity, combined with cool judgment. He destroyed the Russian squadron at Berdiansk, and the military position at Taganrog, burning the Russian transport flotilla. He then bombarded Arabat, and cut off the supplies of the enemy by the capture of the store depôts at Genichi and Gheisk. At the latter place corn and hay were stacked for full 4 miles along the coast, protected by a large force of infantry and cavalry. Osborn anchored his gunboats close in shore, landed his seamen and marines in four divisions at intervals of a mile, and advanced them simultaneously on the enemy's defences, which were carried, and the whole of the vast magazines were utterly destroyed. In 1856 Osborn was promoted to the rank of post captain, and, at the request of Sir Edmund Lyons, he was appointed to the 'Medusa,' and retained his command of the squadron in the sea of Azov until the end of the war. The prostration of the Russian armies in the Crimea, which led to peace, was due in no small degree to the destruction by Sherard Osborn of all their resources of supply in the sea of Azov. For this distinguished service he was created a Companion of the Order of the Bath on February 5th, 1856, as well as an Officer of the Legion of Honour, and of the Medjidie. He was also specially presented to the Queen at Windsor; and so deeply was Lord Lyons impressed with the high qualities of Captain Osborn, that he expressed his opinion that "this young officer was fully capable of commanding a fleet."

Sherard Osborn became a Fellow of the Royal Geographical Society in 1856, and in the following year his first paper *On the Geography of the Sea of Azov, the Putrid Sea and adjacent coasts, with remarks on their commercial future* appeared in the Society's Journal.

In the spring of 1857 Captain Osborn was appointed to H.M.S. 'Furious,' on the news of a war with China, and he received orders to escort a force of fifteen gunboats to Hong Kong. His instructions gave him large discretionary powers as to the route and arrangements, and many essential preparations had to be made at Devonport under his superintendence. Doubts were entertained of these vessels, some of them of the lightest draught that had ever passed the Cape, effecting the voyage at all during the winter of southern latitudes. The Commander-in-Chief at Devonport, Sir William Parker, was so much struck with the arduous nature of the task before Captain Osborn that, in giving him his parting orders, he said, in the presence of his secretary Mr. Charles Richards, "If ever you sir, deliver all that squadron safe to your admiral in China, you deserve to be made a commodore." He carried the squadron on a great circle to the south of the Cape, and the passage was made without one disaster. That squadron of gunboats changed the character of the war with China, and brought it to a successful issue. The 'Furious' took a prominent share in all the actions from the escalade of Canton to the capture of the Taku forts in 1858, and Osborn was the first to reach the city of Tientsin and the entrance of the Great Canal.

In the month of July 1858, the 'Furious' brought the intelligence of a treaty of peace to Shanghai, and two high Chinese officials were to follow to arrange the terms of the transit duties and to revise the tariff. But as they could not arrive for some weeks, a good opportunity offered for the British Ambassador to proceed to Japan, and there secure the same privileges that the Americans and Russians had recently exacted. Lord Elgin, with his private secretary Mr. Laurence Oliphant, embarked on board the 'Furious,' and was accompanied by the 'Retribution,' the gunboat 'Lee,' and the yacht 'Emperor.' After touching at Nangasaki, the 'Furious' weighed from Simoda on the 12th of August and, steaming up the gulf of Yedo, passed Kanagawa, and bore away for the capital of Japan. She went off the American chart on to really unknown waters, and was the first foreign man-of-war to anchor off the city of Yedo. An English squadron and an English Ambassador were now off the capital of Japan, the bearers of a message of good will, but yet to show, in a way not to be mistaken, that the hour had arrived for Japan to yield to reason. Lord Elgin successfully negotiated and signed a treaty, and on the 27th of August the 'Furious' weighed and proceeded to sea. The Ambassador, in his despatch, said—"I ascribe the success of the policy which I considered it my duty to carry out at Tientsin and Yedo, in a great measure to the zeal, energy, and devotion with which I was supported by Captain Osborn, and those under his command."

On the return of the 'Furious' to Shanghai, a question arose, in framing the supplementary treaty with China, as to how far it was possible to declare the great river Yang-tsze navigable to Europeans. Captain Osborn, judging from its volume at Nanking, felt confident that it must be navigable for hundreds of miles, and undertook to test the question. He conducted the 'Furious,' 'Cruiser,' and two gunboats up a falling and intricate river to Hankow, a distance of 600 miles from the sea; the 'Furious' having several times to be cleared to her keel to float her off unknown shoals and reefs. No ship of the size or draught of the 'Furious' has since been able to reach Hankow, and Captain Osborn's remarkable feat of seamanship enabled Lord Elgin to insist on the river being opened to foreign commerce. In his despatch, dated January 5th, 1859, the Ambassador said:—"The transport of a vessel the size of the 'Furious' to a point so remote from the sea under circumstances so peculiar is, I apprehend, a feat unparalleled in naval history. I consider the successful issue of this undertaking to have been mainly due to the energy, professional skill, courage, and judgment of Captain Osborn and his

able master." The latter officer was Mr. Stephen Court, formerly master with Sir Robert M'Clure in the Arctic Regions, and of whom Osborn speaks so highly in his narrative of the voyage of the 'Investigator.' Mr. Court died, from the effects of the climate during this severe service, on the 11th of April 1861. Captain Osborn was also obliged to be invalided, and he returned to England on half-pay in 1859, to undergo a long series of surgical operations.

Sherard Osborn had suffered serious pecuniary losses, and while on half-pay he devoted himself to literary labours for the support of his family; working late and early, in spite of depressing illness, and resolutely putting the whole power of his mind into the new and unaccustomed life to which duty pointed. Between December 1858 and May 1859, *A Cruise in Japanese Waters* was published in five numbers in *Blackwood's Magazine*, and afterwards as a separate volume. In the same periodical a paper *On Allied Operations in China* appeared in November, and *The Fight on the Peiho* in December 1859. In the latter paper he celebrated, not his own deeds, but those of his brother officers after he had been obliged to leave the scene—of Admiral Hope, of Willes and Shadwell, and of his dear old friend of the 'Collingwood' days—Jones Birom, to whom he was so warmly attached. It is characteristic of Osborn that when he laid aside the sword to take up the pen, it was not his own deeds of prowess that he recorded but those of his comrades; of M'Clure in the Arctic Regions, of Sir James Hope and his squadron in China. His papers on *Progress in China* appeared in May 1860, January 1863, and February 1863. In April 1860 was published his paper entitled *Our Position with China*, and in June 1861 *A Cruise on the Yang-tsze in* 1858-59. His article on *The Voyage of the Fox in the Arctic Seas* was published in *Blackwood* in January 1860, *The Transatlantic Telegraph Iceland Route* in February 1861, and *The Physical Geography of the Sea* in March 1861. The two articles on *Iron-Clad Ships of War* appeared in November and December 1860.

In December 1869 Sherard Osborn published *The Career, Last Voyage, and Fate of Sir John Franklin*, a noble subject, ably and worthily treated. It is a charming memoir, written by one who had a heartfelt sympathy for the gallant Franklin and his brave companions, and one feels that every sentence comes direct from the writer's heart. It thus concludes—"As those men fell in their last sad struggle to reach home, their prayer must have been that their countrymen might learn how nobly they accomplished the task they had voluntarily undertaken. That prayer has been granted. As long as Britain exists, or our language is spoken, so long will be remembered and related the heroic fate of the crews of the 'Erebus' and 'Terror,' and how they died in the execution of their duty to their Queen and country."

Two papers were communicated by Osborn to the Geographical Society at this time; namely *Remarks upon the amount of Light experienced in High Northern latitudes during the absence of the Sun* in 1858; and *Notes Geographical and Commercial made during the Passage of H.M.S. 'Furious,' in* 1858, *from Shanghai to the Gulf of Pecheli and back* in 1859.

In the spring of 1861 Captain Osborn was appointed to the command of H.M.S. 'Donegal' a line-of-battle-ship, and in her he embarked a portion of the British force sent to co-operate in the allied attack on Vera Cruz. Jones Birom, his shipmate in the 'Collingwood' as a midshipman, and whose gallantry at the Peiho, when his gunboat was sunk under him, was recorded in Osborn's article in *Blackwood*, was Commander of of the 'Donegal.' After a service of some months on the coast of Mexico the 'Donegal' was paid off in 1862. This ship was in such admirable order that, on Osborn's recommendation, her first lieutenant received his promotion. During his absence, in the 'Donegal,' Osborn lost his father, Colonel Osborn, who died, at the age of seventy-six, on the 14th of September 1861.

In 1862 an offer was made to Captain Osborn, which he accepted, by Mr. Lay, as Agent to the Chinese Government, of the command of a large squadron of vessels to be equipped by him in England for the suppression of piracy on the coast of China. The offer was, however, accepted on the distinct understanding that Captain Osborn was not to be placed under any local authorities, in order to guarantee that the force should not be used against European powers, or in any way hostile to our naval sense of humanity and justice. Orders were to be received direct from the Emperor of China. With this understanding Captain Osborn accepted the command with the consent of the Admiralty, and officers were lent from the navy. A squadron of six vessels was constructed, equipped, and carried to the neighbourhood of Peking by Captain Osborn in 1863; under whom were Commander C. S. Forbes, R.N.; Commander Burgoyne, R.N.; Captain Allen Young, the companion of M'Clintock in the 'Fox'; while Spencer Chapman, who was a midshipman in the 'Furious' and was warmly attached to his beloved old captain, was Osborn's aide-de-camp.

The Chinese Government, however, repudiated the promises and engagements of Mr. Lay, and wished to place a mandarin as a superior officer on board Osborn's own ship. This of course altered the whole aspect of the affair. With the approval of his Government, Osborn had accepted the command, with the object of uprooting piracy. It now appeared that, if the Chinese view was accepted, the force would probably cause embarrassment to Her Majesty's Government, and be prejudicial to British interests. Osborn did not hesitate as to the course he should pursue under these circumstances. His ruling passion through life was devotion to his profession, and love of his country. He could easily have amassed a large fortune in a perfectly legitimate way; but the interests of England were his first concern, and he withdrew the whole force from China. His disinterested conduct received the highest commendation from his Government, and he also had the gratification of being privately very warmly and cordially thanked by Lord Palmerston.

We insert, in this place, a note by Sir Bartle Frere on his friend Sherard Osborn, with reference to his conduct in the disposal of the Chinese fleet.

"I first met Sherard Osborn in Bombay on his return from China, after breaking off his engagement with the Chinese Government, made through Mr. Lay. His conduct on this occasion was nobly disinterested and every way worthy of him. He had undertaken at the request of our Envoy to aid the Chinese Government in creating a navy to put down piracy on their coasts. He had formed in England the nucleus of such a navy

in the shape of a squadron of swift, well-armed, small vessels, and had taken them to China, when he found that the Chinese Government was determined not to adhere to their engagement with him, a cardinal point in which was direct communication with the Emperor and his Prime Minister. He found the Chinese, having got him and his vessels out there, were determined to place over him a mandarin, to whom he was to be completely subordinate. Osborn knew that this would make him a mere puppet in the hands of a Chinese, certainly quite ignorant of naval affairs and probably corrupt, and totally indifferent to the success of the plans devised by Osborn. After fruitless remonstrance, he threw up his engagement, though great sums were offered him to remain, and play into the hands of the mandarin clique, which hoped to make a good thing out of the naval expenditure.

"The question then arose what to do with the vessels? They had not been paid for nor delivered over to the Chinese, and were still in Osborn's possession. The war between the Northern and Southern American States had just broken out, and agents from the Southern States were then in China to purchase vessels to be fitted out as Southern cruizers to prey on the Northern trade. The agents had heard of Osborn's squadron, and would have paid a sum far above its cost to secure such formidable vessels—one of them was reputed to be not only one of the swiftest steamers then afloat, but, being armed with a Whitworth steel gun, one of the most formidable. Her combination of speed and handiness with an armament available at longer distances than most of the guns we then possessed, rendered her more than a match for vessels of much greater size and heavier metal, and there could be no doubt that in the hands of the Confederates she would have done more damage to the Northern trade than half a dozen Alabamas. Large sums were offered Osborn either to transfer the squadron himself or to wink at its transfer by the Chinese. It was intimated to him that he might name almost any terms and be sure that they would be accepted. The temptation was a great one to a very poor man, saddled with the cost of the whole squadron, and quite uncertain whether he could get rid of his responsibilities without utter ruin. But he was proof against the temptation, though put to him in a form which to a man of less sensitive honour might have seemed free from objection, and he sailed with his squadron, and with the heavy responsibility of its cost on his shoulders, to India, hoping there to find the Viceroy, Lord Elgin, who had been our British Ambassador in China, with whose approval he had undertaken the attempt to form a Chinese Navy. At Singapore he learnt of Lord Elgin's sudden death in the Punjab, and he therefore came on to Bombay where I was then Governor, and his old friend Admiral Montresor in naval command. At Bombay the offers of the American belligerents were repeated with such persistence that Osborn felt it would be unsafe to follow out his plan, which was to leave the vessels at Bombay and go to England himself to arrange for their disposal. The risk of the sale of the vessels to private parties leading to a serious breach of neutrality was made so clear to us, that we strongly recommended to the Government of India the purchase of the squadron, and Osborn thus by his foresight and noble disinterestedness prevented a second and much more serious edition of the Alabama claims."

Sherard Osborn returned to England in April, 1864; and was appointed to the command of H.M.S. 'Royal Sovereign,' an old line-of-battle ship, which had been cut down and adapted to test the new system of turrets invented by Captain Cowper Coles. This talented officer had first conceived the idea of a turret ship while serving in the sea of Azov, and in the subsequent development of his system he had always received warm sympathy and encouragement from Sherard Osborn. At length he secured a fair trial, and Osborn had the pleasure of being able to report on the perfect success with which 12-ton guns were for the first time used at sea in the navy, and of otherwise showing the excellence of his friend's turret system. He remained in command of the 'Royal Sovereign' until the end of 1864, when she was paid off. In 1867 he published two articles in *Blackwood's Magazine*, relating to this subject, namely, *Our Naval Defences*, in January, and *The Turret Ships of England and America*, in February.

Sherard Osborn, since his return in 1854, had always strongly felt the importance to the navy, and the advantages to science, of a renewal of Arctic exploration. He had studied the subject in all its bearings with the greatest care, and to vast practical experience acquired in the Arctic Regions, he added a complete knowledge of all that had been done and written both before and since the period of his own voyages. He knew that sledge-travelling was the true way to explore the unknown region round the North Pole, and that a route must, therefore, be selected which offered the means of travelling along a coast line running in a northerly direction, as well as a safe retreat. These essentials are only to be found by way of Smith Sound, and, in raising the question, this route was selected.

Sherard Osborn's memorable paper on the exploration of the North Polar Region was read at the meeting of the Royal Geographical Society on the 23rd of January 1865, Sir Roderick Murchison in the chair. Never was there so large and enthusiastic a gathering of Arctic officers and men of science. Among the former were General Sir Edward Sabine, Admiral Collinson, Captain Richards, Captain Inglefield, Captain R. V. Hamilton, Captain Aldrich, Captain W. W. May, Captain Allen Young, Mr. Clements Markham, Dr. Donnet, Dr. Domville, and Mr. Dean, the worthy and zealous carpenter in three Arctic expeditions. There were also the Comte de Paris, Lord Dufferin, Sir Henry Rawlinson, Sir John Lubbock, Mr. Spottiswoode, and Mr. John Barrow. The address was eloquent and conclusive, and stirred up the feelings of those who heard it to such purpose that the subject was not again allowed to drop. To those who alleged that Arctic labours and researches had merely added so many miles of unprofitable coast line to our charts, his answer was most telling. He said:—

"They should confront our knowledge of 1864 with that of 1800, upon the natural history, meteorology, climate, and winds of the Arctic Regions. They must remember that it was there we found the clue, still unravelled, of the laws of those mysterious currents which flow through the wastes of the ocean like two mighty rivers—the Gulf Stream and the Ice

Stream; they must remember that it was there—in Boothia—that the two Rosses first reached the Magnetic Pole, that mysterious point round which revolves the mariner's compass over one-half the northern hemisphere; and let the world say whether the mass of observations collected by our explorers on all sides of the Magnetic Pole have added nothing to the knowledge of the laws of magnetic declination and dip. They should remember how, a few years ago, it was gravely debated whether man could exist through the rigours and darkness of a Polar winter, and how we have only recently discovered that Providence has peopled that region to the extreme latitude yet reached, and that the animals upon which they subsist are there likewise, in winter as well as in summer. All this, and much more, should be borne in mind by those cynics who would have you believe we have toiled in vain; and I hold, with the late Admiral Beechey, 'that every voyage to the north has tended to remove that veil of obscurity which previously hung over the geography and all the phenomena of the Arctic Regions. Before those voyages all was darkness and terror, all beyond the North Cape a blank; but, since then, each successive voyage has swept away some gloomy superstition, has brought to light some new phenomenon, and tended to the advancement of human knowledge.'"

He enumerated the objects to be attained, and explained that they should be secured by the despatch of two screw steamers by way of Smith Sound, under naval auspices. "It is," he said, "by the action of public opinion, directed by the men of science in this country, that I hope to see a Polar expedition sent forth in this generation under naval auspices. The navy needs some action to wake it up from the sloth of routine, and save it from the canker of prolonged peace. Arctic exploration is more wholesome for it, in a moral as well as a sanitary point of view, than any more Ashantee or Japanese wars.

"You are not going to educate us, work us up to the point of nautical perfection, awaken hopes and ambition, and then give us oakum to pick, or run us over the mast-head after top-gallant yards, to keep down the spirit which intellectual progress has evoked. The navy of England cries not for mere war to gratify its desire for honourable employment or fame. There are other achievements, it knows well, as glorious as victorious battles; and a wise ruler and a wise people will, I hold, be careful to satisfy a craving which is the life-blood of a profession—indeed, I hold that it ought to be fostered and encouraged. Upon these grounds, as well as those of scientific results, would it be too much to ask for a fraction of the vast sum yearly sunk in naval expenditure, for two screw-vessels and 120 officers and men, out of the 50,000 men annually placed at the disposal of the Admiralty?"

This was what Sherard Osborn asked for in 1865, and went on asking for, until he got it in 1875. In spite of lukewarmness, in spite of divided counsels, he went on steadily working, preparing the public mind by writing, and by encouraging others to speak and write, until at last he secured unanimity, and gained his great and patriotic aim.

Meanwhile he was busily employed in other important work. In 1865 Messrs. Blackwood brought out a uniform edition of Sherard Osborn's works in three volumes; the first containing *Stray Leaves from an Arctic Journal* and *The Career, Last Voyage, and Fate of Sir John Franklin;* the second *The Discovery of a North-West Passage;* and the third *Quedah, A Cruise in Japanese Waters*, and *The Fight on the Peiho.* In the same year he was specially elected by the Committee a member of the Athenæum Club. He was also a member of the Junior United Service, Garrick, and Reform Clubs.

His distinguished position in the navy, and his well-known talent as an administrator, led to his being offered the post of Agent for the Great Indian Peninsular Railway Company, which he accepted, and he sailed for Bombay on March 3rd, 1865. He found a chaos. He worked hard, and in the space of a year he reduced the traffic, and all the other departments to order. His talent for organization was most valuable, and was especially useful in arranging for the cotton traffic, and for the storing and shipment of the bales. When he returned to England in April 1866, he received the special thanks both of the Government of Bombay and of the Supreme Government of India, who expressed "very sincere regret at the prospect of the loss of Captain Sherard Osborn's services, which Government believes to have been most valuable to Government and the public."

Sir Bartle Frere thus writes of Osborn's services at Bombay:—

"I next knew him when he came out as manager of the G. I. P. Railway in March, 1865. It is one of the longest and most important in India, and owing to the death of an able chief engineer, whilst it was still incomplete, and other causes, had got into an unsatisfactory state. Osborn came out with extraordinary powers, which he exercised with his usual prompt decision, the result of full knowledge of the affairs with which he dealt, and at the same time with a kindly consideration which took off the sting from the many unpleasant duties which fall on the reformer of such an undertaking when once its affairs have got into disorder. His presence acted like magic: difficulties of every kind disappeared; an incredible amount of work was got through in a marvellously short space of time with an amount of friction far less than had ever been experienced; every one was soon convinced that such management by such a man was of all forms of administration the best for such undertakings in India. But when the difficulties had disappeared, he felt that there was, in some influential quarters, an inclination to limit the discretion which had achieved so much, and, convinced that any such limitation would destroy his power of useful action, he, with his usual independence, resigned his lucrative and honourable post, rather than hold it on terms inconsistent with efficiency.

"I met at this time with an instance of the simple kind-heartedness which was so conspicuous in all he did. I was congratulating a friend who had been a fellow passenger of his, in the homeward-bound steamer, on having so agreeable a companion, when my friend remarked—'But we hardly ever saw him the whole voyage. There was a friend invalided home, and supposed to be dying, and Osborn sat with him day and night, nursing him as if he—Osborn—had been his friend's mother, and till the sick man was able to walk about no one ever saw Osborn.'

"It has always been a great satisfaction to me to

know that when he thought he would be compelled to retire from the navy I spoke to him very seriously to the effect that his quitting the service would be a national loss. I spoke only what I felt, and have never thought I over-estimated the loss the navy would have sustained had he been then withdrawn from it, for I looked to him ever since I first knew him as a man destined to be one of our great naval captains if he ever lived to see another war."

In 1867 Sherard Osborn undertook the office of Managing Director of the Telegraph Construction and Maintenance Company for the purpose of giving his professional knowledge to the work of establishing submarine telegraph communication between Great Britain and her Indian and Australian possessions and colonies. He felt that in furthering these enterprises he was doing good service both to the navy, and to commerce. In four years the great work was completed by a series of submarine cables from Falmouth, the Mediterranean and Red Seas, to India, Hong Kong, and Australia, and, as his successor Admiral Richards truly said, "Captain Osborn might feel that, from a public as well as a professional point of view, he had served the commercial as well as the military interests of his country." On the 29th of November 1870 Osborn read a paper at a meeting of the Geographical Society on *The Geography of the bed of the Atlantic and Indian Oceans and Mediterranean Sea*, in which he announced that 17,000 miles of cable, worth £6,000,000, had been laid during the two previous years. He held the post of Managing Director of this Company from 1867 to 1873, when he was succeeded by his old friend and Arctic comrade, Admiral G. H. Richards.

In 1868 Sherard Osborn stood for Birkenhead, at the general election, fighting a gallant battle in the liberal interest against the overwhelming local influence of the Messrs. Laird. He was unsuccessful; and his defeat was a loss to the House of Commons and to the country. For Osborn had a most agreeable voice, ready fluency of diction, and the rare gift of eloquence; combined with great knowledge of naval matters and of railway and telegraph management, and remarkable administrative talent. He continued to take a keen interest in politics, and was frequently officially consulted on the various subjects respecting which he had special knowledge.

In June 1870 he was elected a Fellow of the Royal Society. In 1871 he commanded H.M.S. 'Hercules' in the Channel Squadron for a few months, and on the 29th of May 1873 he was promoted to the rank of Rear Admiral. His devotion to all matters relating to his profession never flagged. In 1873 he wrote and published a thoughtful and most valuable pamphlet on the coast defences of Great Britain; and at the very time of his death he was actively engaged upon the important question relating to breech and muzzle-loading guns.

In 1872 Sherard Osborn considered that the time had come for renewing the effort he had made in 1865, and, on the 22nd of April 1872, his second paper was read on the exploration of the North Polar Basin, at a very full meeting of the Geographical Society. He repeated his previous arguments, which had all been materially strengthened by the various attempts of Swedes, Germans, and Americans, in the interval. As in 1865, so in 1872, he maintained that the route by Smith Sound is the one by which experience has given British navigators the best assurance of reaching a high latitude with the greatest certainty, and the smallest amount of risk to ship and life. This time perfect unanimity was secured among Arctic authorities, and a Committee was appointed by the Council of the Geographical Society to draw up a memorandum on the results to be obtained by Arctic exploration, consisting of Admiral Sir George Back, Admirals Collinson, Ommanney, Richards, and Sir Leopold M'Clintock, Captain Sherard Osborn, and Mr. Clements Markham. During the next two years and a half Sherard Osborn was actively engaged in the good cause, and it is due to his vigour, combined with wise and judicious management, that success was at length secured. In the number of *Ocean Highways* for July 1872, he wrote an article urging that "Arctic exploration is the right field in which to keep up the high repute and spirit of our navy, and that it is calculated to stimulate officers to that career of exertion, emulation, and self-sacrifice, which is really the soul of the service." And he raised a warning which appealed to the pride of his countrymen and had a lasting effect. Speaking of the attempts of foreigners he said—"If the 'rest and be thankful' policy is much longer adhered to, we cannot but feel that the explorers of one or other of these nations may wring from us the honour of exploring the polar area, around the threshold of which British seamen have, since the days of the memorable voyages of Cook and Phipps, just a century ago, toiled and suffered, and achieved successes until the honour lies just within our grasp."

On the 16th of December 1872, Sherard Osborn, accompanying Sir Henry Rawlinson and a numerous deputation, waited on Mr. Lowe and Mr. Goschen to urge the importance of despatching an Arctic Expedition. After reading a letter, and introducing the subject generally, Sir Henry referred to Captain Osborn for details, who explained that the expedition should consist of two well strengthened screw steamers, with crews of sixty men each, and be provisioned for three years. One vessel would press as far as possible to the northward up Smith Sound, while the other remained within reach of communication with Baffin's Bay; both being engaged in obtaining valuable scientific information within the unknown area. Mr. Lowe said that the subject was one of great interest, and that it should receive careful and mature consideration. But his reply, dated January 1st, 1873, was unsatisfactory.

The goal was, however, now in view. A few more well-conceived and vigorous efforts and success would be secured. Sherard Osborn found that the objection to which official and other persons most obstinately clung, was based on the alleged difficulties and dangers of ice navigation. He, therefore, came to the conclusion that nothing would more tend to dispel this objection than some practical proof or trial, and that it was essential that a naval officer should proceed to the Arctic Regions in a whaler, and return with a full report of all he had seen and experienced.

He selected for this important service, Commander A. H. Markham, who had been an ardent volunteer for the hoped-for Arctic Expedition when Osborn first raised the question in 1865, and when he was a young

lieutenant; and who had ever since taken a deep interest in the efforts for the renewal of Arctic exploration. Under Osborn's auspices Commander Markham embarked at Dundee in the whaler 'Arctic,' and accompanied her in her remarkable and very successful cruise. This voyage showed the great change that powerful screw steamers have made in ice navigation. The 'Arctic' was only detained sixty hours by the ice of Melville Bay, where former expeditions composed of sailing vessels had usually been stopped for several weeks. It is also remarkable that, in his short summer cruise, Commander Markham passed the farthest points reached by Sir Edward Parry's expedition in 1824; by Sir James Ross's in 1848; by Mr. Saunder's in 1850; by Captain Forsyth's in 1850; by Mr. Kennedy's in 1851; and within a few miles of Sir Leopold M'Clintock's in 1858. Commander Markham returned in August 1873, and published the results of his observations and of the experience he had acquired in ice navigation, in a work entitled *A Whaling Cruise in Baffin's Bay*, to which Admiral Sherard Osborn wrote an introduction. In the meanwhile a second careful and elaborate memorandum had been prepared by the Arctic Committee of the Geographical Society on the scientific results of Arctic exploration. The latter half of this memorandum, in which it is explained, from the knowledge and experience already acquired, why such researches can only be successfully accomplished by a naval expedition despatched under Government auspices, and secured as far as possible from failure or disaster by careful organization and good discipline, was written by Sherard Osborn. At the meetings of the British Association at Brighton in 1872, and at Dublin in 1874, papers written by him, were read, advocating the despatch of an Arctic Expedition.

Strengthened by the results of Commander Markham's voyage, and by the arguments of the memorandum, the Presidents of the Royal and the Royal Geographical Societies, accompanied by Admiral Sherard Osborn, had a very satisfactory interview with Mr. Disraeli on the 1st of August 1874; and on the 17th of November the Prime Minister addressed a letter to Sir Henry Rawlinson announcing that Her Majesty's Government had determined to lose no time in organizing a suitable expedition to explore the region of the North Pole. Thus, after ten years of unceasing labour, involving much brain-work, and no small amount of tact and prudent management, the patriotic exertions of Sherard Osborn were crowned with complete success. Much is to be attributed to the gradual preparation of the public mind by the numerous publications on Arctic matters either written or inspired and encouraged by Osborn; something doubtless to the memorandum of scientific results. But Admiral Osborn always said, and no one had such good means of knowing, that the crowning arguments which turned the scale were derived from the voyage of Commander Markham to Baffin's Bay.

As soon as the expedition was decided upon, the Admiralty wisely appointed a committee, consisting of Admirals Richards, Sir L. M'Clintock, and Sherard Osborn, on the 24th of November 1874, to settle all the details regarding the description of ships to be employed, the various kinds of stores and provisions required, the preparation of boats and sledges, the sanitary arrangements, and the instructions to be given. The Report of the Committee is dated February the 4th 1875, and was signed after its members had held nineteen meetings. These members were also members of the Arctic Committee of the Royal Geographical Society; and the main recommendations of the Report are identical with those contained in Osborn's paper of 1865. They are, that the ships to be employed should be two screw steam vessels, strengthened and fitted for Arctic service, and capable of carrying stores and provisions for at least three years, and a complement of about sixty men for each ship; a third ship being sent out in the spring of 1877 for relief, if the expedition has not then returned. The reasons why the Smith Sound route is preferable to any other are then stated to be, first, that its entrance has been found free of ice by several vessels, and that one expedition reached as far as the 82nd parallel; second, that it is known to have a continuous coast-line up to 82° N., where depôts could be placed, and that the Danish settlements can be fallen back upon from it in case of disaster; third, it is the only route promising a continuous coast-line far north, on which the prospect of reaching the Pole by travelling parties mainly depends; and fourth, animal life is abundant up Smith Sound. The Committee then recommend that the expedition should sail in about the middle of June or earlier; that it should touch at Disco and at Proven and Upernivik for dogs; that Lyttleton Island near the entrance of Smith Sound should be fixed upon as a rendezvous, where records should be left; and that the ships should then proceed up Smith Sound, erecting cairns and leaving records on conspicuous points, not more than 60 miles apart. Capes Frazer, Back, and Beechey on the western, and Capes Jackson and Bryan on the eastern shore are named. It is recommended that, while both ships should share in the objects of discovery and exploration, one should be so placed that she would serve for the crew of the other to fall back upon, and that the united crews, if their ships are still detained by the ice, could retreat to the relief ship at the entrance of Smith Sound in 1877. Consequently, the second ship must not go northward of the 82nd parallel. It is suggested that as soon as the winter quarters of the second ship are selected, the leader of the expedition might take a portion of her crew to enable him to accomplish a sledging attempt to reach the Pole. It is not contemplated that the two ships should winter at a greater distance apart than 200 miles; and they are to be abandoned if their extrication is doubtful during the navigable season of 1877. All points connected with provisions and clothing were considered by the Committee, with the aid of Dr. Lyall and Mr. James Lewis, Paymaster, R.N., both officers of Arctic experience; and the sledge equipments were left to Sir Leopold M'Clintock, as well as the sanitary arrangements on board the ships. But the Committee urge that all possible measures should be taken to secure warmth, ventilation, and the absence of condensed vapour between decks. One great advantage enjoyed by the Arctic Expedition has been that Sir Leopold M'Clintock was Admiral Superintendent of Portsmouth dockyard at the time of fitting out, and that thus all the gear was fitted and arrangements made by the highest living authority on sledge-travelling.

The ships were commissioned on the 15th of April 1875, and the following is a list of the officers.

H.M.S. 'ALERT.'

*(751 tons, 100-horse power).*

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| *Captain* | George Strong Nares, F.R.S., F.R.G.S. |
| *Commander* | Albert Hastings Markham, F.R.G.S. |
| *Lieutenant* | Pelham Aldrich. |
| ,, | Alfred A. Chase Parr. |
| ,, | George A. Giffard. |
| ,, | William H. May *(navigating duties).* |
| *Sub-Lieutenant* | George Le Clerc Egerton. |
| *Fleet Surgeon* | Thomas Colan, M.D. |
| *Surgeon* | Edward L. Moss, M.D. |
| *Assistant-Paymaster* | Edgar De H. Whiddon. |
| *Engineer* | James Wootton. |
| ,, | George White. |
| *Naturalist* | Captain Feilden, R.A. |

H.M.S. 'DISCOVERY.'

*(556 tons, 96-horse power).*

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| *Captain* | Henry F. Stephenson. |
| *Lieutenant* | Lewis A. Beaumont *(navigating duties).* |
| ,, | Robert H. Archer. |
| ,, | Wyatt Rawson, F.R.G.S. |
| ,, | Reginald B. Fulford. |
| *Sub-Lieutenant* | Crawford J. M. Conybeare. |
| *Surgeon* | Belgrave Ninnis, M.D. |
| ,, | Richard W. Coppinger, M.D. |
| *Assistant-Paymaster* | Thomas Mitchell. |
| *Engineer* | Daniel Cartmel. |
| ,, | Matthew R. Miller. |
| *Naturalist* | Chichester Hart. |

Osborn had been visited by much home affliction while the Arctic Committee was sitting. His brother, Captain Noel Osborn, R.N., a good officer, who served in the 'North Star' in the Arctic Regions, died suddenly on January 23rd, 1875, and almost at the same time he lost one of his brothers-in-law. He had also been overtasked by brain-work of various kinds. Still the fitting out of the Arctic Expedition was an object of deep interest to him, such as had the power to divert his thoughts from painful subjects. In it he lived his old enthusiastic life again. It was, in very fact, his creation: and he took the most affectionate interest in the young aspirants to Arctic fame. On Monday, the 3rd of May, he came down to Portsmouth, and was constantly on board the ships on that and the two following days, examining into all the details, making the acquaintance of those officers whom he had not known before, and doing many acts of thoughtful kindness.

On the evenings of Monday and Tuesday, he received several of the officers at dinner at his hotel, told them his experiences and many pleasant stories of Arctic life, and renewed the memory of past days, while encouraging them with hopes of future success. His bright and cheery smile, and friendly words will long be remembered by his young successors in Arctic work. It was a happy time for him—those three days—and, in our grief and regret at what was so fearfully close at hand, it is a consolation to think of them. He returned to London on Wednesday. On Thursday, the 6th day of May, he was well and busily employed at the Admiralty, at the Athenæum, and in Savile Row during the day. He went out to dinner, was taken ill at half-past eight with heart disease, became insensible after three quarters of an hour, and died at about ten.

Sherard Osborn was buried at Highgate Cemetery, on Monday, the 10th of May 1875. Many true mourners stood round the grave; with the widow, the two daughters, and the sister of the brave and noble dead. Of his Arctic comrades there were Richards and M'Clintock, Allen and Lyall, Pickthorn who was with him in the 'Pioneer' in 1850-51; and Clements Markham who also served with him during four years in the 'Collingwood.' There, too, were John Barrow, the staunch old friend of all Arctic officers, Allen Young, and Leigh Smith. The present Arctic Expedition was represented by Captains Nares and Stephenson, Commander A. H. Markham, Lieutenants Parr, Rawson, and Giffard, and Sub-Lieutenant Egerton. Captain C. S. Forbes, Spencer Chapman, and Colonel Jenkyn Jones, the brother of his old friend Jones Birom, were there; and among other old naval friends there were Admiral Sir John Hay, Admiral Rowley Lambert, Captains Seymour, Mayne, Davidson, and Mr. Charles Richards. Sir Henry Rawlinson was there to do honour to Osborn's memory, both as a friend and as President of the Geographical Society; and many others, among them Mr. Lack, the outfitter in the Strand, who has fitted out two generations of Arctic officers. The Hon. Frederick Walpole, M.P., an old 'Collingwood' messmate, was unable to be present, but sent his carriage.

That Sherard Osborn's death was a national loss has been declared by the unanimous voice of public opinion. The *Times* thus wrote of him:—"He had lived long enough to do the State distinguished service, and seemed to be a man to whom in an emergency we should turn for aid of even greater value in the days to come. He was made of too stern materials to be a universal favourite. His opinions were too uncompromising, and his will too determined to be fully appreciated in a time of peace. But, during an active and varied career, he had won the respect of his profession, and few men had warmer and more devoted friends among those—and they were many—who knew him well, whether civilians, brother officers, or shipmates in the humbler walks of life. He was gifted with the highest professional abilities, pre-eminent for cool self-possession and ready resource in action, daring to the utmost stretch of naval audacity, but as prudent as he was daring, a strict disciplinarian, yet one of the most popular of captains." The *Spectator* spoke of him as "one of the best specimens of a very fine class, the educated naval officer who knows his profession thoroughly, but knows business too, and understands politics on the great scale. He had displayed qualities which pointed him out as a reserve force, a man who might head the fighting fleet in a great war, or even administer the entire navy." His death was, indeed a national loss, but we mourn him as a dear friend, as one whose like can never more be found. Few know of the thousand acts of generous and unselfish kindness which constitute one bright side of his life story, but each out of hundreds knows of one or more such acts. All who really knew him will ever remember his bright and cheerful face, his hearty greeting, his pleasant genial voice. That his life will long serve as an example to others we may feel well assured; for there never lived a better sailor, a braver officer, a truer man, a more faithful and affectionate friend than Sherard Osborn.

## THE ARCTIC EXPEDITION.

THE loss of its truest and wisest friend is a calamity to the Arctic Expedition. Sherard Osborn, if he had been spared, would have devoted all the energies of his mind to furthering the interests of the absent explorers. His great influence, his tact and prudence, his powers of persuasion and, when necessary, of denunciation, and his intimate knowledge and appreciation of the work, would have constituted him a friend of inestimable value. It is a calamity, but it is not one that should cast any gloom over the departure of the Arctic ships. Osborn had lived long enough to secure the despatch of the expedition, to take part in all the preparations, and to wish God speed to his gallant young successors in Arctic exploits. The explorers will think of him as of one who has completed his work nobly and manfully, and, in seeking to emulate his deeds, his memory will be a source, not altogether of regret, but also of pleasure and admiration.

On that 5th of May when he saw them last, Osborn left the ships in the steam basin of Portsmouth dockyard, fully rigged, and with the stowage of the coals and of three years' stores and provisions nearly completed. Since then the work has been steadily continued.

The ships are barque-rigged like the whalers, and fitted with Pinkey and Collins' patent reefing and furling topsails, an arrangement which obviates the necessity of men going aloft for either purpose; and they have a large amount of fore-and-aft canvas. The crow's-nests are lashed to the main royal poles. They are of wood, and about 5 feet high by 2½ in diameter, entered by a trap in the floor, and with a hood of canvas working on a hoop round the upper rim, Jacob's ladders beginning from the lower rigging lead to the trap-hatch. The screw propellers are raised by means of a tackle and small pair of iron shears; the hook being attached by a hole in the upper part of one of the fans, and no framework being used. Two spare fans are kept in readiness on the upper deck. The rudder, although three tons weight, is easily unshipped and triced up to two davits over the stern; and a spare rudder is supplied to each ship. Both ships have been considerably strengthened. Outside there is a doubling of 4½ inches of teak from the water-ways to the keel. Inside, the bows have been fortified by numerous strong diagonal and fore-and-aft carlings, and the beam power has been considerably augmented. Iron knees have also been added; and a fore-and-aft stringer of eight inches thickness, between the shelf-piece and water-ways, right round the ship on the lower deck, has been introduced, which securely fastens and ties the timbers and plankings together. On the bows there are iron plates of half inch thickness, and eight to ten feet in length, which are bolted to the stern, and will protect the bows, and assist in charging and crushing the ice. Filling-in pieces have been put under the channels of the 'Alert' to allow the ice a free passage. The 'Discovery' has no channels. The figure-heads consist of a Union Jack painted on a shield, and surrounded by gilded scroll work, with the motto *Ubique*, and on the bowsprit head of the 'Alert' is a horse-shoe, which has already brought luck to many ships on many seas. Each ship has a white streak just above the water-line. The 'Alert' has a red, and the 'Discovery' a green line, a few inches below the gunwale. The boats are white, with red and green lines respectively; and the crow's-nests are also white, with red hoops round that of the 'Alert,' and green round that of the 'Discovery.'

Each ship has nine boats, all built by White, of Cowes. These are a 25-feet yawl, pulled by 10 oars, a 20-feet cutter, two whale boats completely equipped with lines and harpoon guns, one whale boat for the captain's use, two 20-feet ice-boats, one 15-feet ice-boat, and a 12-feet punt. The boats are propelled by oars or paddles, and are built as light as possible. Each boat has a strip of copper on either side of her entrance to protect her bows when coming into contact with the ice. All are diagonally built. Six are hoisted up to davits, three on each side; and the yawl and two ice-boats are stowed on skids over the quarter-deck while at sea. Four ice-saws and tripods are supplied to each ship, besides ice-anchors, chisels, claws, and other Arctic implements.

The 'Alert' stows 175 tons of fuel; 90 tons of which (patent fuel) are for steaming, and the remainder (hand picked North Country, and a little anthracite,) are for cooking and warming purposes. The consumption of coal is about four tons for twenty-four hours for a speed of six knots. The warming is effected by nine stoves, besides the galley fire. Each ship has on board thirty-nine months' provisions for sixty men.

The complement of each ship, besides officers, consists of a chief boatswain's and a chief carpenter's mate, a ship's steward, a ship's cook, two captains of the forecastle, three ice quartermasters from Dundee and Peterhead, a captain of the fore and a captain of the main top, a sail-maker, a rope-maker, an armourer, a cooper, a caulker, a carpenter, a second captain of the fore and main tops, fourteen able seamen, on board the 'Alert,' and twelve on board the 'Discovery,' a captain's and a ward-room steward, a ward-room cook, four stokers, a sergeant and six marines, and two dog-drivers. The whole complement of the 'Alert' is sixty-two, and of the 'Discovery' fifty-eight officers and men. The 'Alert' has already shipped one dog-driver, Mr. Patersen. She will take on board one, and the 'Discovery' two in Greenland; with thirty dogs for each ship. In the 'Alert' will also be Commander Markham's noble black retriever *Nelly*, which was reared and trained on board H.M.S. 'Sultan,' and is now about four years old, and in the prime of life; and a white cat presented by the boatswain of Portsmouth Dockyard.

Much attention has been given to preparations for securing scientific results. Captain Nares is a practised surveyor, and also brings from his experience in the 'Challenger' a knowledge of dredging and deep-sea sounding. Commander Markham has studied and practised surveying, and has also gone through courses of instruction in magnetism and spectrum analysis. Lieutenants Parr and May will use the transit instrument, and have gone through a course of instruction with the spectroscope, and Lieutenant May will do the navigating work. Lieutenant Giffard has studied terrestrial magnetism. Dr. Colan will test for the presence of ozone and take other observations, and Dr. Moss is a microscopist and an excellent artist. Mr. White is a photographer. These officers form

the scientific staff of the 'Alert.' They will all collect zoological and botanical specimens as opportunities offer; in which they will receive able co-operation from Captain Feilden, R.A., who has been appointed as naturalist. In the 'Discovery' Lieutenant Beaumont will be the navigator, and Lieutenants Beaumont and Rawson will undertake the pendulum observations. Lieutenants Archer and Fulford have gone through a course of instruction in magnetism, and Sub-Lieutenant Conybeare will observe with the spectroscope. Dr. Coppinger is a photographer. These officers form the scientific staff of the 'Discovery.' Of course, as in the 'Alert,' all the officers will lose no opportunity of collecting zoological and botanical specimens. Mr. Chichester Hart, has also been appointed to the 'Discovery,' as naturalist; his qualifications being chiefly those of a botanist.

The great scientific want of the expedition is a trained field geologist who has given special attention to glacial action and to other Arctic geological problems. Commander Markham, and some of the other officers, have studied geology, but it is a science which cannot be efficiently learnt without field work and a long training, and, although pains will be taken to observe accurately and to record carefully, yet the absence of a trained geologist of mark is a serious defect in the staff of the expedition.

A series of instructions, or rather of suggestions, has been prepared by the Royal Society for the use of the Arctic officers: on meteorology by Mr. Scott; on the spectrum of the sun with a view to terrestrial absorption, by Professor Stokes; on the eclipse of March 25th, 1876, by Mr. Hind; on pendulum observations, by Professor Stokes; on the polarisation of light, by Mr. Spottiswoode; on tides, by the Rev. Samuel Haughton, D.D.; on botany, by Dr. Hooker; on the collection of hydroids and polyzoa, by Dr. Allman; on terrestrial magnetism, by Professor Adam; general hints, by Professor Huxley and Mr. Tyndall; on the detection of meteoric cosmical dust in the snow, by Professor Roscoe; on the phenomena of the Aurora, by Mr. Rand Capron; on collecting mammalia, by Dr. Gunther; on cetacea, by Professor Flower; and on the towing-net, by Dr. Allman. Papers from transactions of Societies, and extracts from books on Arctic zoology, botany, geology, and physics, with other matter, have also been reprinted and edited by Professor Rupert Jones, as an Arctic Manual. The portion on Arctic birds is by Professor Newton of Cambridge.

The Royal Geographical Society has presented to the expedition a volume of "Selections of Papers on Arctic Geography and Ethnology." The first part contains: papers by Dr. Robert Brown, on the geography of Greenland, with an account of its inland ice, and the formation of fiords and icebergs, and a narrative of all attempts to penetrate into the interior; a paper proposing to attempt to reach the pole by the Smith Sound route, by Baron von Wrangell; a criticism on Dr. Kane's discoveries by Dr. Rink; a paper on the Arctic current by Admiral Irminger; and a most valuable series by Admiral Collinson on the ice along the coast of Arctic America, with a sketch of the work of all the expeditions that have made discoveries in that part of the frigid zone. The second portion contains papers on the origin and migrations of the Greenland Eskimo, and on the Arctic Highlanders; a sketch of the Eskimo grammar and classified vocabularies; and a list of all names of places on the coast of Greenland, with Eskimo names and their meanings, ancient Norman sites, Danish names, and names and latitudes on the Admiralty chart, with remarks, by Mr. Clements Markham; a note on the origin of the Eskimo by Dr. Rink; a detailed memoir on the Western Eskimo by the late Dr. Simpson; and a Report by a Committee of the Council of the Anthropological Institute with a series of suggestive questions.

Due attention has been given to the provision of amusements and instruction during the winter quarters, the trying period of forced inaction. Sub-Lieutenant Egerton and Lieutenant Rawson have undertaken the preparations for dramatic entertainments, concerts, masqued and fancy dress balls, foot-ball matches, and other in-door and out-door diversions; and many presents of books and games have been received. Sub-Lieutenants Egerton and Conybeare, under Commander Markham and Lieutenant Beaumont, have done most of the hard work connected with the close personal superintendence of the stowing of the holds; while the other officers have been busily engaged in receiving scientific instruction. But all is now nearly ready; and by the 29th of May as fine and gallant a crew of officers and men as ever left these shores will be ready to sail for the Arctic Regions, and to resume the glorious work of exploration within the frigid zone.

In a previous article* we gave our readers a detailed account of the work of an Arctic Expedition, including the sledge-travelling. There are nineteen sledges supplied to each ship; with tents, sleeping-bags, and cooking apparatus for two twelve-men sledges, six eight-men, and six five-men sledges which can be used as dog sledges; two heavy sledges for work near the ship, a light cart for travelling over the land, a long ladder sledge designed for glacier travelling, and two small satellite sledges. The officer of each sledge will have a flag and a motto, and will christen his sledge by some name. The flag of Captain Nares has been beautifully worked and embroidered by Lady M'Clintock. It is a silken Union Jack, embroidered on one side with the Nares crest, two spears crossed saltire-wise with a knot *azure*, and the motto *Dum spiro spero*, and on the other side a rose, thistle, and shamrock.

The other flags are in accordance with the heraldic rules which prevailed in the days of chivalry, when each officer had his standard, 3½ feet long, swallow tailed, with a cross of St. George *gules* on a field *argent* next the staff, the rest parted per fess with the colours of the arms and charged with the crest, a narrow bordure gobbony of twisted silken cord also of the colours of the arms.

The sledge flag of Commander Markham was worked and embroidered by Mrs. Clements Markham. Next the staff a cross of St. George *gules* embroidered on white silk; the rest per fess *or* and *azure*, swallow tailed, and charged with an embroidered winged lion of St. Mark passant, holding a pair of hames all *gules*; a bordure gobbony of twisted silk *or* and *azure*. The motto *Luctor et Emergo*. The flag staff, presented by Captain Hoskins, R.N., of H.M.S. 'Sultan,' is of lance-wood, surmounted by a truck consisting of a

* *Geographical Magazine* for March 1875, p. 65.

solid silver naval crown, above which is a silver star of five points and round the staff are silver bands with the Markham crest and monogram. His sledge will be christened the "Marco Polo." Commander Markham is of the family of Markhams of Cotham, in Nottinghamshire, a daughter of which married the father of Sir Hugh Willoughby, the famous Arctic navigator.

The sledge flag of Lieutenant Aldrich has the cross of St. George *gules* on a field *argent* next the staff, the rest, swallow-tailed, per fess *vert* and *or* charged with a bull *argent*, a bordure gobbony of silken cord *vert* and *or*. The motto *Fortitudo vincet*. Lieutenant Aldrich is a nephew of Captain Aldrich, R.N., who distinguished himself as an Arctic sledge traveller in 1851.

The sledge flag of Lieutenant Parr is per fess *azure* and *argent*, charged with a crowned female head; the rest as the other flags. The motto *Faire sans dire.*

The sledge flag of Lieutenant Giffard is barry of six *gules* and *argent* charged with a stag's head; the rest as the other flags. The motto *Spare not.*

The sledge flag of Lieutenant May is per fess *or* and *gules* charged with a leopard's head issuing from a ducal crown *or;* the rest as the other flags. The motto *Nil desperandum*, the same as was used by Sherard Osborn during the sledge travelling of 1851.

The sledge flag of Sub-Lieutenant Egerton is per fess *gules* and *argent* charged with three arrows crossed *sable;* the rest as the other flags. The motto *Virtuti non armis fido.* A daughter of the house of Egerton was the mother of Sir Hugh Willoughby, the brave old Arctic navigator.

In the 'Discovery' the sledge flag of Lieutenant Beaumont is *gules* charged with a cinquefoil ermine. The rest as the other flags. The motto *Erectus non elatus.*

Lieutenant Archer has *azure*, three arrows, *or.* The rest as the other flags. The motto *Bona acta quæ honesta.*

Lieutenant Rawson has per fess undy *sable* and *azure*, charged with a raven's head *sable* guttee *or*, with a gold ring in its beak on an escutcheon *argent.* The rest as the other flags. The motto *Laus virtutis actio.*

The sledge flag of Lieutenant Fulford is per fess *gules* and *argent*, charged with a bear's head *argent.* The rest as the other flags. The motto *Bear up.* Lieutenant Fulford is of the family of Fulfords, of Fulford, in Devonshire, a daughter of which, Mistress Faith Fulford, married John Davis, the great Arctic navigator and discoverer of Davis Straits.

Sub-Lieutenant Conybeare has per fess *sable* and *gules*, charged with a falcon. The rest as the other flags.

Early in March 1876 these flags will be crisply rustling over the sledges in the cold Arctic air, while the gallant crews are preparing for the great work of the expedition. The grand march to the Pole will occupy six or more sledges, and there will be explorations along the north coast of Greenland, and in other directions. That the expedition of 1875 will perform sledge journeys equal to those of 1851 and 1853-54 there can be no doubt, if the circumstances are equally favourable; and this will secure complete success. There will be the same appliances, neither better nor worse, the same hardships and perils, and equally brave and gallant men to overcome them. But it is unfair and misleading to say that the present expedition is going out with greater advantages than were enjoyed by any that preceded it. The ships are more handy and are propelled by powerful screw propellers; but on the other hand they are not stronger, they draw more water, and the interior stowage is most seriously curtailed by the engine-room. The ships of former expeditions were warmed with hot air by a Sylvester stove, ensuring comfort and thorough ventilation, with a place for drying clothes, making beer, and bathing at a suitable temperature. The 'Alert' and 'Discovery' have no warming apparatus, and must rely exclusively on stoves for warmth and ventilation. The scales of provisions and clothing are practically identical. The present explorers have no advantages that were not enjoyed by their predecessors, and in some respects will not be so comfortable. They will have to face exactly the same difficulties, and to endure exactly the same hardships and sufferings. That they will manfully face and overcome them is certain; and their achievements will assuredly be great and honourable. They go forth, the vanguard of England's chivalry, to emulate the deeds of the old naval worthies of our nation, and to add another glorious page to its maritime history. The heartfelt wishes of every true Briton for success and a safe return go with them.

## THE SALT FARMS OF THE LOIRE.

THREE or four days spent in the old city of Guerande, on the Lower Loire, were assuredly not thrown away last summer-tide. The place is ancient and picturesque enough in itself, with its machicolated walls of granite, its frowning gateways—formerly arches of triumph—and those curious sculptures and painted windows so frequent in this church and castle-crowded region; for not even over the great German River do more frequent shrines and fractured battlements impend. But, for the visitor who has only a little time to spare, the first attraction consists in the actual manners of the people; for, after all, though it may be heresy to think so, the living are more interesting than the dead. And here, more perfectly perhaps than in any other part of France, the costumes and customs of old Brittany are preserved.

It was during the great June fair that my short stay occurred, and when, apart from the invariable wealth of the season's fruits and vegetables, a mighty market is held of toys, of fabrics for peasant use, and of household utensils—tin especially—since they constitute a staple of the neighbourhood. But, amid all, there was a universal presence of salt—white and grey; and albeit already knowing that this valley was famous for the production of that substance, indispensable in nearly every zone of the earth, I had no idea that an entire population was engaged in cultivating it.

The Brittany folk, it should be said, by way of explanation, speak of their salt industry not as of a manufacture, but as of an agriculture. The earth and water, in their phraseology, must be regularly tilled, in order to yield the Arab symbol of welcome. Thus they say, "the swamp will flower soon," as though it were going to be covered with lilies; "the harvest will be

ready before long"; "the crop promises well," just as if they were talking of wheat or wine. Sallying forth among the little villages, scattered along the shores of shallow lakes, or rather ponds, lying below the crumbling fortress-like capital of the district, the stranger observes a distinct division of the ground. Here are trees of immense height and ponderous foliage, bordering fields which, when their riches fructify, are red with clover and yellow with corn; but these, without exception, flourish on the stony uplands. Below, in the vicinity of the saline marshes, nearly all is barren, except where a few roots—potatoes they style them—or a little moss, not bright and rich like that of the Black Forest, but of a lichen grey, vary the surface.

Some of the small hamlets have an animated and picturesque appearance; but so much cannot be said of the inhabitants. These, for the most part, although broad conclusions would not be justified by a flying visit, look poor, pale, and anxious; as, indeed, they are, in the midst of their "marsh-gardens," to which nothing, even in Lincolnshire, can be compared; large, oblong hollows raised amid artificial banks, a little above the common level, like the fish reservoirs on the Bay of Biscay; filled at high tide from the sea with water that has previously been stored for about a month, in more extensive tanks, and then distributed through miniature canals resembling those of the Chinese rice-fields, and continually drying up under the influence of evaporation. The process complete, a sediment of salt, more or less thick, according to the luck of the farmer, covers the bottom. Then the eager "salt-man," sometimes every day, sometimes every other day, furnished with a long rake, gathers in his "crop," and spreads it on the drier banks. It is interesting to watch the nervous care with which he avoids disturbing the oozy bed, thus effloresing to his hand, or bringing any extraneous material ashore. Happy for him should the white expanse glisten like a sheet of subsiding foam; it is then of the crystallising kind, proper for the use of the sardine picklers.

But the pursuit, taken for all-in-all, is not a very profitable one. There is an excess of competition for the salt-farmers of this valley, fed from the far Cevennes, to contend with. As one fact, no other industry depends more utterly upon the vagaries of the weather. When the sun shines warmly, the lakelets sparkle with promise; when there is mist, or rain, or a cloudy sky, the people of the villages resemble the river population of London in the extreme of a freezing winter. You may know at one glance from the elevated windows of La Guerande, whether there will be an evening of songs and jollity, or sorrow and desponding among the people below. For nowhere exists a race more improvident, or more addicted to living literally from hand to mouth. How they get through the months, from the October of one year to the April, May, or June of another, passes all guessing. They have little more than twenty weeks in which to work; but this interval is never wasted. The men having collected their treasure, carry it to the large drying-pans or basins; there, with marvellous dexterity, considering the simplicity of the apparatus employed, it is shaped into cones, less like the sugar-loaves of commerce than the tents of a Tartar camp; and now the labours of the women commence. You see them heavily-laden, bearing cumbrous wooden-trays, or osier baskets piled and pressed to the brim; then their store is either laid down with a thin covering of loose salt over it for the season's use, or else buried with a view to sale after the lapse of even three or four years—whenever, indeed, the market may be unusually active. But, in spite of all their efforts, these toilers of the miniature salt-lakes of the Loire are mostly poor; they share their gains in a very unequal way with the proprietors of the soil; and to the women, the payment for carrying their loads from the ponds to the store is sordidly insufficient.

Occasionally, when there are girls in the family, broad of shoulder and brown of limb, they earn a little by assisting their fathers or brothers; but, taken altogether, it is a wretched industry; far less remunerative than that of the fishermen who dwell at a distance of not more than 6 or 7 miles, along, perhaps, the most curiously broken and indented coast of Europe. Among them, however, you not unfrequently see hardy frames and contented faces; you hear pleasant songs, and see wholesome meals spread out on hospitable cottage tables; and there is an occasional liveliness among the sheds of the more fortunate sardine-fishers. Still, these workers between sea and land, never forget that they are subject to an oppressive and devouring tax, formerly much more burdensome than now; and, singularly enough, what makes their position worse is that the demand upon their supply is considerably less than it used to be.

Salted food, you are assured by the economists of the hamlets, is neither so popular nor so necessary as it once was in France, and the 10,000 villagers who reap a harvest from the marshes of the valley practice few of the ingenuities to be remarked among a similar class on the coasts of the Mediterranean. They are easily satisfied, in all conscience, with their coarse black bread, fish—taken in exchange for brown salt—a sort of sour cheese, not unlike stale Brie, a vegetable which might be a Jerusalem artichoke or an Australian potato for any place it holds in natural history, and a liquor, neither wine nor beer, watery and saline, which is simply one degree less detestable than the pine water extolled by doctors, of the Pyrennean forests.

Like all isolated communities, these salt cultivators have a dialect, or, if you will, a slang of their own, which, however, is easily translated. They do not think (as a French writer has already observed), that the men, women, and children of the earth have a right to expect plenty of food, and yearn for no happier valleys than their own. Strictly speaking, the word "health" is unintelligible to them. They leave their swamps fallow during seven months of the year, and woe to him who should suggest the draining of those miasmatic lagoons, or turning them to the purposes of a different cultivation! Yet they are not in every respect the slaves of custom. For example, I was assured that much of what I saw was comparatively new: the bleaching of the salt, the washing and refining houses, the substitution of horse for hand power, where steam has not yet entered, the lighter tasks set to children and the gentle piety prevalent. Nor is life, even upon these repulsive flats, one bleak and barren monotony. For, with the salt season, comes the fishing season, and sardines are in the offing.

There are few similar fisheries on the sea-board of

France, and certainly no such temptations to fishermen. It is all a succession of bays, roadsteads, inlets, and creeks; and every year, after the chapels have been adorned with gifts, and groups have kneeled at ghastly Calvaries, 300 craft, at least, swarm out in search of the sardine. "There's nothing to be got now-a-days, except thou fish for it," as the philosopher of the net said to the Prince of Tyre. But the sardine is a triple luxury, and would be as nothing without the salt of the Loire and the oil of Tuscany. An exulting time is it for the dwellers about the salt-basins when a lucky catch has taken place of that mysterious little fish which, caught by myriads in the Atlantic, comes nobody knows whence, though traditionally from the Southern seas, as its name suggests. It has been seen in large shoals, travelling along at a safe distance from the coasts of Finisterre; it has been described as first cousin to the Cornish pilchard. The people of the pans care nothing about these questions; they only ask, will it arrive, silvery and glistening, in mighty masses of life, brightening the sea, and actually concealing the water, in time for the pickling laboratories in, round, and about the feudal desolation of Guerande? Suppose the answer favourable. The scouts of the coast have reported that the sardines have been espied, coming on with the brilliant breeze, straight towards the milky foam that is shaken on the shore; and yet a temporary disappointment, even now, is possible. The shoal may have taken it into its many heads to dive, and will, perhaps, lie deep out of view for a fortnight; but up, in its turn, it must come, and then the summer sea reflects hundreds of white sails; the men put out gaily in their painted craft; women and children crowd the beach and sands; I should be sorry to guess at the length and breadth of twine net or the number of tin ladles put under requisition; but the excitement could hardly be more intense were an armada in the offing. The sea is literally swept by vast expanses of net, big I was going to say as the mainsail of a clipper, hanging perpendicularly, steadied by large plummets of lead, like the weights of a Dutch clock, and baited profusely. "The fish," you are informed by the local natural historians, "cannot get through the net, because their bodies are bigger than their heads; they cannot retreat, because they are entangled by their own gills;" the haul therefore is a pretty safe one; but the sardine requires a great deal of tempting. The irresistible dainty to this epicure is cod's roe, in which a regular commerce is carried on. Now and then, mackerel or shelled oysters will do; but not on any grand scale. Which accounts, the dealers affirm, for the high price of the genuine delicacy, since this item must be added to the varying cost of salt and oil, and the serious expense of packing. For the sardine sales must be immediate; the fish will not keep in a fresh state for more than a few hours; the women and children, therefore, as one boatload after another arrives, reckon up the contents with a dexterity and precision inconceivable, and send them off at such a speed as might suggest that the whole world was gaping for breakfast.

No breathing time is allowed; the glittering heaps are carried to the sheds, where the salt-workers are waiting, washed, pickled, plunged in boiling water, spread out to dry, laid in their beds of oil, and soldered in tin boxes, and stacked in immense heaps, ready for Piccadilly, Soho Square, Paris, St. Petersburg, Vienna, and Arctic Expeditions. All now depends upon two circumstances—the box being air-tight, and the oil pure. A defect in either means "irretrievable ruin." It is hinted that a considerable proportion of the spoilt qualities find their way to the gold diggings of the New World.

This is the merry time of the year for the people of the pans; and the women, with their heads and feet bare, and in their short, brightly-dyed petticoats, swing along with contented faces beneath their coal-heavers' loads, and chatter noisily over their evening meal of dark and hard bread, and broiled fish—meat is unknown, even the swine-flesh which the German charcoal-burners can afford. To complete the feast there is soup, not exactly answering perhaps to Charles Lamb's *potâge de Boulogne*, made from an old boot boiled in nine gallons of water; but consisting of soaked bread, a few vegetables, a handful of herbs, and an abundance of the native salt. In the winter, even this sort of plenty is often absent, and the poor folk lie in bed all day, on the French principle *qui dort dine*.

The general picture of life among these saline lagoons—of scattered and lonely cottages, of pale and pining countenances, of young and old, knowing nothing of any world beyond the circle of their little hamlets, except the prouder world perched upon the heights of La Guerande—is upon the whole, a sombre one, even with the bloom of summer to brighten it, and yet there are happy glimpses of beauty and simplicity that temper the sadness of the scene.

HORACE ST. JOHN.

## KULJA.

MR. KHAROSHKIN, whom we have to thank for a good many valuable notices about Russian Turkistan, has lately published the account of a voyage undertaken to Kulja in 1873, which is based on official information, and contains many interesting statistical data. After the reports of Radloff and Welikhanow respecting Kulja, which at that time was still under Chinese rule, a more detailed discussion on the ethnical and geographical relations of the country would be quite superfluous, although the work of Mr. Kharoshkin presents many new features, especially concerning the Chinese and Dungan population. We will confine ourselves at present exclusively to the statistical portion, from which we obtain the following intelligence:—

The town of Kulja, situated at a distance of 3 versts from the banks of the Ili River, consists of the town proper and several suburbs. The former is surrounded by a wall of clay, about 6 versts in circumference. The principal street runs from the western gate named Köve to the opposite gate Dang, and is cut in the middle by the street Chan-Köche, running in a straight direction from north to south, to the gate called Su. Thus the town is divided into four quarters, each of which is traversed by a number of crooked lanes. Altogether 2167 houses and farm premises and 49 mosques are counted in the place.

The population of the inner town numbers 10,114 souls; the entire population, including the inhabitants

of the surrounding places, may be estimated in round numbers at 15,000. Of these there are:—

| | Men. | Women. |
|---|---|---|
| Russians ... ... ... | 1153 ... | 148 |
| Taranjis ... ... ... | 2980 ... | 2978 |
| Chinese ... ... ... | 814 ... | 846 |
| Sartes ... ... ... | 391 ... | 244 |
| Dungans ... ... ... | 274 ... | 259 |
| Total ... ... | 5612 | 4475 |

The great majority are Taranjis, descendants of those penal-colonists of Western Turkistan who the Chinese banished to these regions 100 years since from the rebellious province of Atti Shehir. After these follow the Russians, including the soldiers, whose number alone amounts to 1014 men. The Chinese are third in number, and the Dungans are considered the smallest fraction, which must be taken as a consequence of the late war, in which they were severely punished.

In regard to religion, the population of Kulja divides itself:—(1) into orthodox Russians, who possess at present but one temporary church-building. (2) Catholic Chinese, who, in former times, counted about 300 families, but are now reduced to 70 souls. These Catholic Chinamen settled in this region about 100 years ago, probably in order to escape persecutions in the interior of the empire. They possess a small chapel consisting of a large room, with an altar, above which a lithograph of the Archangel Michael is suspended, while upon the altar itself there lies a Latin Gospel of the year 1769, and a Chinese book, probably also a Gospel. Of late the Catholic Chinese begin to turn towards the Greek Church, which would afford a considerable nucleus to the missionary labours of the Greek clergy, whose efforts have hitherto remained utterly fruitless in Muhammadan Turkistan, but promises the most favourable results among the inhabitants of Dzungaria. (3) The Taranjis possess a large mosque, an old one-story high building, supported by 60 wooden columns, and besides this several smaller mosques and a shrine of pilgrimage, viz., the grave of Saïd Amir Jolala-'din. There is also another memorable mosque of the Dungans, with a characteristic minaret. (4) Buddhists or Pagans, as the Russians call them, had a large pagoda, the façade of which is only now being built. The gloomy place destined for the reception of Bürkhan's or Buddha's image is already finished, as also the sacrificial shrine with the necessary thuribles.

The proportion of the various confessions is as follows:—

| | Males. | Females. |
|---|---|---|
| Russian Church Members... ... | 1044 ... | 119 |
| Catholic Chinese... ... ... ... | 71 ... | 47 |
| Protestants ... ... ... ... ... | 3 ... | — |
| Muhammadans ... ... ... ... | 3650 ... | 3307 |
| Buddhists ... ... ... ... ... | 809 ... | 802 |
| Total ... ... | 5577 | 4275 |

*Commerce.*—The commerce of Kulja is of very little importance, owing partly to the continual troubles prevailing in the East, partly to the general poverty of the country and people, who by the prolonged war were doomed to misery and desolation. The principal articles of commerce are clothing, cotton-stuffs, and tea from Vernoe, silk and woollen wares and other textile fabrics from Khokand and Kashgar, which are brought over the passes of Narin and Müzart. There is also a good deal of trade in dried fruit, ironware, and fancy goods, which are imported partly from Khokand and Kashgar, partly from Petropaulovski and Semipalatinsk. The total imports of the town and environs of Kulja in 1873 were valued at 214,459 roubles. We must also mention the import of gold and silver jambes (massive gold and silver lumps used as currency), and of amber, which is manufactured into pipe-tubes, mouth-pieces, and various trinkets, as also into ornaments, decorating the hats of the Kalmuks and Sihos, to show their official rank. One pound of this article is valued at from 2000 to 3000 roubles. Concerning the export business, Kulja in the course of the above-mentioned year sent off to Khokand, Kashgar, Vernoe, Karaköl, Tashkend, and the neighbouring Chinese district of Selücha, the following articles:—jambes, grain, fruits, cattle, cotton, ironware, bags, and other fabrics, to the value of 279,193 roubles. Of Russian merchandize, wines and stearin candles are in great demand in the towns of Shikho, where Chinese troops are stationed at present.

*Industry.*—What little industry Kulja possesses is all due to the Chinese, who transplanted the taste for art, assiduity and skilfulness of their pigtailed race, even to these western outskirts of "the celestial flowery dominion of the Middle." Had the Taranjis and Kalmuks been left to themselves, or had they remained in a preponderating majority, Kulja would not be a bit farther advanced than either Yarkand or Aksu. The principal trades are the following:—founders, manufacturing kettles, plates, and other implements of a very primitive form; paper-makers, whose productions do not seem to be superior to the paper manufactured at the present time after Chinese patterns at Khokand and Samarkand. There are, moreover, some confectionaries in which cakes of all shapes are baked of rice and millet, overlaid with sugar; also maccaroni-makers, the Taranjis being notoriously very fond of dried farinaceous food. In Eastern Turkistan there still exist many similar trades, and although their products are not equal to European articles of the same kind—I mean here the fabrics of the formerly western Chinese provinces—they are still said to be profitable. Finally among the tradesmen we may mention millers, vinegar manufacturers and potters. The number of factories amount to-day at Kulja to 38, wherein over 131 hands are occupied. To this of course other tradespeople have to be added, such as 169 boot-makers, 50 blacksmiths, 48 carpenters, 11 brass-founders, 3 silversmiths, 26 stone-cutters, and 2 tailors.

A. VÁMBÉRY.

## KHIVAN MISSION TO INDIA.

MR. A. KUHN gives in the *Turkistan Gazette* an interesting account of a journey through Afghanistan to Simla, of the Khivan Envoy, who was sent in 1871, by the Khan of Khiva, to solicit the aid of the Viceroy of India against the then threatened Russian invasion of the khanat.

After the occupation of Khiva by the Russian troops, Mr. Kuhn found himself, during a scientific exploration of the country, in the town of Khanki, where he lodged in the house of Amin Bai, the Hakim or

governor. This man was universally respected in Khiva for his wisdom and justice. On discovering accidentally that it was his host who had proceeded to India in the capacity of envoy, Mr. Kuhn prevailed upon him to give him an account of his mission, and the description of his long journey, which is here summarised.

The father of Amin Bai, had, on more than one occasion, been sent as envoy to Afghanistan and India by Allah-Kuli-Khan, the predecessor of the present Khan Muhammad Rahim; therefore, according to prevailing custom, Amin Bai, succeeding to his father's office in the government of the town, inherited also his parent's itinerant capacity.

Amin Bai was summoned to Khiva, in the beginning of 1871, by the Khan Muhammad Rahim, who said to him —"I am going to send you on an embassy to England. During the reign of Allah-Kuli-Khan we were always in friendly relations with that State, but since then we have for a long time known nothing concerning it. You are, then, to proceed without delay to Hindustan, to acquaint yourself with the condition of affairs in that country, with the real disposition of the English towards us, or, in one word, to renew our old friendship. If thou art questioned as to our relations towards the Russians, thou shalt make answer that whatsoever they—the English—shall command us to do, that we shall perform; thou shalt, at the same time, deliver a letter, with gifts, and return to us with a reply thereto."

The envoy left Khiva on the 28th of February 1871, with a retinue of twenty-five servants, fifteen camels, twenty-three horses, and two mules. The sum issued to him to defray the expenses of the mission was 150 large gold tillas (tilla-pukhté, or ripe tillas = about 6*s.* 6*d.*), or about 50*l.*

At Naiman, a village distant about 21 miles from the capital of Khiva, the road emerges on the waterless desert, and as the mission had to perform three marches to Sahdja before reaching a well, the camels were laden with two leather bags of water each, each *tursuk* or bag containing twenty-five to thirty bowls of water. The marches were made, as usual, between midnight and dawn, and between 2 or 3 P.M. and 8 P.M. These tursuks were replenished at Sahdja for seven waterless stages south. The first march from Sahdja brought the caravan to a point called Yol-Airuti or Khivalik-Korum, where the track divides into one leading to Merv, and another to Akhal. The seven marches to *Murza-Chillia* were unrelieved by verdure or wells. Seven more marches brought the caravan to the Khan-Kui wells, dug in 1855, during an expedition to Merv from Khiva, and after two more marches the party reached Okshuk wells of brackish water. The country around these wells belongs to the Téké Turcomans, but it is not inhabited by them on account of the Er-Sary Turcomans, who swoop down on the herds when they are driven here to water. Two more marches brought Amin Bai to Chashkin, which was occupied by the encampments of the Seidli Bai tribe of Turcomans. This was by the lower course of the Murghab, and about five marches and 8 miles below Merv, yet Amin Bai observes that at the encampment of the Seidli-Bai, the river is equal in copiousness to the Shah-Abad Canal in Khiva. After several long marches the mission passed over to the encampments of Téké Turcomans, where it was most hospitably entertained by Kausht-Khan, who lives in a tent outside a fort which is said to have been erected by the Khadjars of Persia about twenty years ago. The Tékés of Merv are said to number 50,000 tents, subdivided into Otamysh and Takhtamysh, the former camping on the southern side of the river, and the latter on the northern. Kausht-Khan is much respected by all the Tékés, and is the chief of the Takhtamysh division of the tribe, but the Otamysh have their own chieftain in one Annayar. The Tékés pay tribute to no sovereign, but their chiefs occasionally pay complimentary visits to the Khans of Khiva and Bokhara, and to the Sirdars (Generals or Princes) of Herat. Kausht-Khan is by no means a ruler as are the Khans of Khiva, Bokhara, or Kokand, and is styled khan only by courtesy. He has not got the power of life and death, which is exercised by the community according to old custom, and criminal cases are decided by kazis or judges, who hold patents either from Bokhara or Khiva. Kausht-Khan and his family reside in six tents within his *sengar*, as all the Turcoman forts are called (meaning a plain space, enclosed within a mud wall and trench). There is a garden with a vinery and various fruit-trees, and several mehman-khanes or guest-houses. The Turcomans dwell all over their spreading corn-fields in the summer, but in the winter they concentrate in groups of about a hundred tents around the *sengar*. A bazaar is held close to the *sengar* on the banks of the river, where traders from various parts, and among them Herat Jews, carry on a lively business, buying up wool, cattle, carpets, and felts, and selling their cottons, &c. These traders are in the habit of depositing portions of their merchandise with the Turcomans, while they travel over the country to traffic with the various outlying tribes. Yet, according to Amin Bai, there has never been an instance of the abuse of this trust by the Turcomans. Amin Bai noticed that there was no great quantity of English goods in the bazaar, that there was more Russian merchandise brought by Khivans and Bokharians, but that the Tékés had apparently a plentiful supply of English arms, acquired, he observes, partly by robbery, and partly through Herat traders.

A march of 6 Khivan tashes or 6 miles, from the *sengar* of Kausht-Khan, brought them to the dam on the Murghab. This dam serves to divert the water into two large canals for the uses separately of the Takhtamysh and Otamysh encampments. The length of this dam or *bend* is 38½ yards by about 28½ yards wide. Each side of the dam is guarded by a camp of 500 Turcoman tents under Hakim Bai. Amin Bai observes that the city of Merv (as it exists at present) is said to be about 8 miles up stream from the dam, from which, as well as from his omission of any other mention of Merv, it is to be concluded that he did not enter Merv, and that the site of the present "city" is not the branch of the Murghab, along which the Khivan Envoy travelled. From the Bend to Yulatan, called *Yolvaten* by Amin Bai, was a distance of 6 tashes (presumably Khivan tashes = 1 English mile each; the Persian tash or parasang = about 5¼ miles). Yulatan and Pend (5 marches beyond or above Yulatan) are the head-quarters of the Saryk Turcomans. Sayun Khan, their chief elder, camps at Yulatan, while Ada-Khan, a subsidiary elder, camps at Pend. At both places which are on the south side of the river, there is a

small Turcoman *sengar*. The Saryks are said to number 20,000 tents: there is a small bazaar at Yulatan. From the encampment of Kausht-Khan to Pend the road is good and even, with occasional patches of sand, and with clumps of bushes; water is procurable from the river all the way to Pend. There may be seen the ruins of a fort around which are pitched some 8000 Saryk tents. From thence to Herat is a good caravan route passing by the Khatcha stream through *Chungurak* and Keshk on the frontier of Afghanistan. The latter place is in the occupation of the Djemshidis, a pastoral tribe divided into four branches, Djemshid, Hazar, Teiméné, and Parkliu, who now number about 7000 tents. These people formerly dwelt in Khiva, and have not long settled at Keshk.

Amin Bai was 18 days in Herat, which place he left, in company with Nauruz Khan, an uncle of Yakub-Khan, then governing in Herat, on the 10th of May, reaching Cabûl in twenty-six days or twenty-six marches. While in Cabul, Amin Bai witnessed the arrival of a Bokharian Envoy with that of an Afghan return envoy from that place. The object of this mission he could not discover, but he was told that the Bokharian had brought the Amîr some very valuable gifts. He ascertained among many other things concerning Cabul and Afghanistan that there were very few English in the city, that the Amîr's revenue amounted to one *crore* of rupees. It was said in Cabul that the English had ordered Shere-Ali to build a fort at Balkh on the banks of the Oxus. Shere Ali Khan, he ascertained, had 40,000 infantry, 10,000 cavalry, and 150 guns; these troops were always ready for war, and were all supplied with English arms. During his stay in Cabul, the English sent the Amîr 100,000 rupeees, 2000 stand of arms, and 1000 recruits. Later, on his way back through Cabul, Shere-Ali gave orders for the formation of a corps, composed of those recruits, for his youngest son Abdullah-Jan; the instruction and maintenance of this corps was undertaken by the English. The Amîr's relatives and rivals for the throne were all in India, and judiciously made to reside under the eyes of the authorities of Lahore and thereabouts. So far as Amin Bai could observe, the Afghans of Cabul were hostile to the Russians. In Cabul the Khivan Envoy was very well received and amicably entertained. Passing through Peshawur, Lahore, and other places, which he very faithfully describes, while he gives an account of the British garrisons and forces on his line of route, the Khivan Envoy reached Simla, where he had an interview with Lord Northbrook, to whom he presented his letters and presents, and from whom he got the memorable answer that the English Government declined to aid the Khan of Khiva in the event of hostilities with Russia, coupled with the advice to cultivate friendly relations with the Russians. After a stay of fourteen days at Simla, Amin Bai departed with Lord Northbrook's reply to the Khan, observing in conclusion of this narrative:—"The English, in my opinion, govern the country very well, and deal with their neighbours very dexterously; their people are visible everywhere, all are in their pay; thus the Afghan pretender—Ismael Khan, son of Madalin, (Muhammad Amin), receives 500*l.* a month; Jelai-Eddin-Khan [Jalaludin], son (grandson?), of the late Dost Muhammad receives 350*l.* a month; Mashrif-Khan [Muhammad-Sharif] and his family receive 750*l.* a month. It is difficult to understand whom the Afghans want as their ruler. The Heratees want Yakub-Khan, the Cabulese want Shere Ali's youngest son, the people of Balkh and the other northern provinces want Abdu Rahman, the inhabitants of Candahar want Ismael Khan.

Amin Bai returned to Khiva by the same route, after an absence of eighteen months.

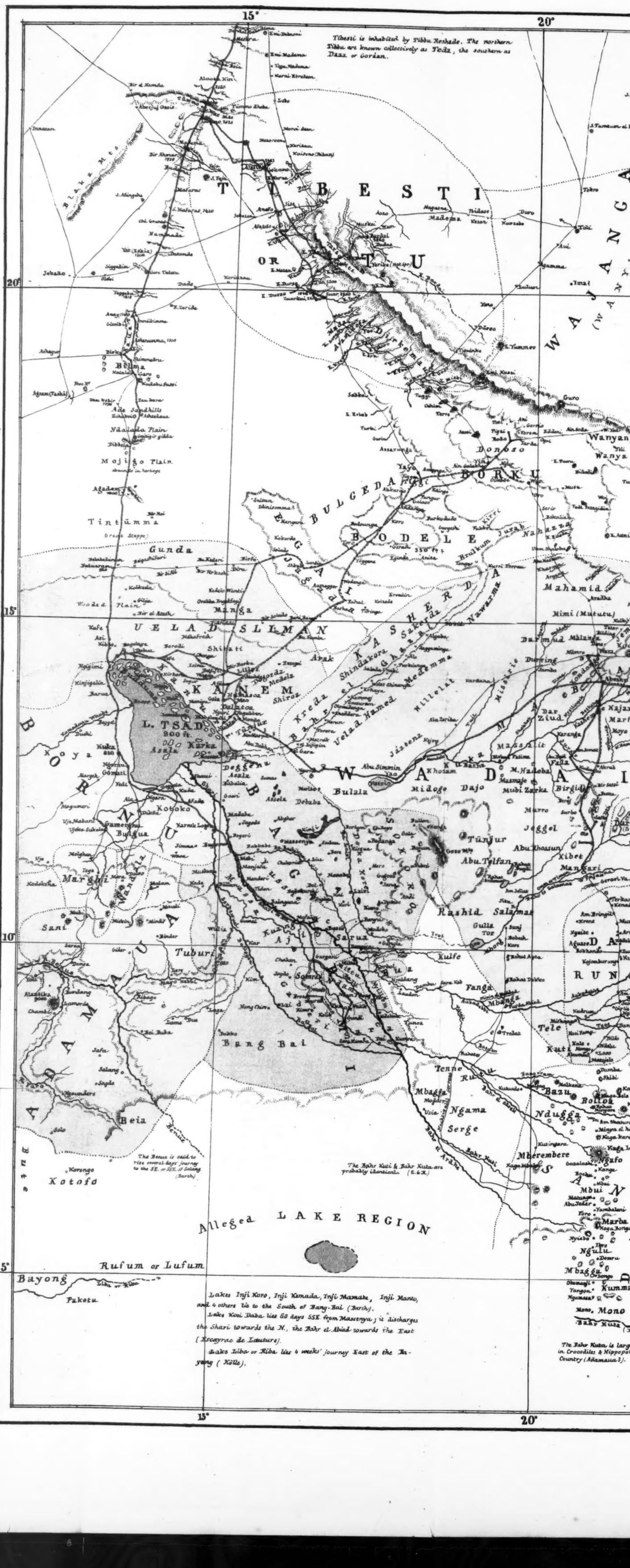
ROBERT MICHELL.

## NACHTIGALL'S TRAVELS IN AFRICA.

IN a former number of this Magazine* we have rendered a full account of Dr. G. Nachtigall's remarkable travels in Africa, from his departure from Tripoli, in February 1869, to his safe arrival at el-Obeid, in Kordorfan, in 1874. We now supplement this account by a map based, almost exclusively, upon the map of Tibesti, published in Petermann's *Mittheilungen*, and the maps of the region to the north-east of Lake Tsad, of Bagirmi and of Wadai, published in the *Zeitschrift für Erdkunde* of the Berlin Geographical Society. The red lines, indicating Nachtigall's routes, exhibit at a glance the extent and direction of his travels, and it should be borne in mind that most of them lead over virgin soil, not previously trodden by the foot of European. There is first of all his journey into Tibesti, the home of the lawless Tibbu Reshade; then his expedition to Borku, and to that remarkable sink in the desert, "Bodele," at an elevation of less than 400 feet above the sea and connected with Lake Tsad by the Bahr-el-Ghazal, through which the superabundant waters of that lake even now occasionally discharge themselves during exceptionally wet seasons. Bodele, in former times, was occupied by a lake, and its present condition furnishes a proof of the desiccation of Central Africa. Nachtigall's trip to Southern Bagirmi likewise supplied a rich store of information, but far more important was his journey to Wadai and thence to Kordorfan, which had been attempted by Vogel and Beurmann, both of whom fell victims to their ardour. Dr. Nachtigall's achievements are all the more remarkable if we bear in mind his chronic insolvency, due, in a large measure, to the mismanagement of M. Rossi, the Austrian Consul, who was charged with forwarding his financial supplies.

Dr. Nachtigall has collected a vast mass of native information; amongst the itineraries inserted upon his preliminary maps, one leading to the Bahr Kuta is perhaps the most interesting. There can be no doubt that this Bahr Kuta is identical with Barth's river of Kubanda and Schweinfurth's Welle. Nachtigall was told that this river exceeded the Shari in width, and flowed west to the countries of the Fellata, the nearest of which is Adamaua. This would point to its identity with the Benue. Schweinfurth, on the other hand, feels convinced that his Welle represents the Upper Shari, and we believe Dr. Nachtigall will arrive at the same opinion after having carefully sifted the information collected. If our readers will refer to the map they will find there the route of one of Nachtigall's servants, which leads to a river Bahr Kuti, near which dwell the Mbagga and Ngama. Near the Bahr Kuta there is likewise a tribe called Mbagga,

* October, 1874.


15°
20°
10°
5°
Tibesti is inhabited by Tibbu Teshade. The northern Tibbu are known collectively as Teda, the southern as Daza or Gorian.
TIBESTI
OR TU
Emi Tabarni
Emi Madema
Tega Madema
Murni Ebralam
Alooka Kin
Bir el Kenda
Aberjuj Oasis
Lobo
Tumma Bubu
Morai dam
Maaroma
Koriam
Kaidemo (Shiam)
Bir Ahanar
Mafaras
S. Mafaras, Palo
Ch. Gruma
Mammada
Yat (Zahia)
Datomda
Siggedim
Jebalo
Dado
Yappaka
E. Zarida
Amay
Bir
Bilma
Kalala
Karo
Kudabufuari
Agram (Tashi)
Ade Sandhills
Ndalada Plain
Dibbelga
Mojigo Plain.
Agadem
Tintümma
(Great Steppe)
Gunda
Woodd Plain
Manga
Kafa
Ari
Kibbo
Shiratti
Arak
Lulia
Kotoko
Bulgua
Margai
Sani
Tuburi
Alantika
Beia
Korongo
Kotofo
Bayong
Fakotu
Rufum or Lufum
L. TSAD
800 ft.
Karka
Asala
Degga
Bulala
Midoge
Dajo
Debaba
Abu Simmin
Yao
Jaggel
Tunjur
Abu Telfan
Abu Thossun
Xibet
Rashid Salamat
Gulla Tor
Sarua
Kulfe
Somrai
Bang Bai
Fanga
Mbanga
Tele
Kuti
Tenne
Mbagga
Bazu
Bolloa
Ngama
Serge
Nduggá
Mberembere
Ngafo
Mbui
Marba
Ngullu
Mbagga
Mono
Donoso
Wanyan
Wanya
BORKU
Guro
Gorrio
Yayo
Yirri
Jurab
Nahaz
Mahamid
Mimi (Mututu)
Dar Ziud
Dar mud Milanga
Durrung
Abeshr
Kajar
Marf
Mayo
Dar
Ngigimi
Barua
Kinjigalia
Dallatoa
Shiroa
Medela
Dogorda
Kanem
Bulkum
Nzwarma
Millelit
Velad Hamed
Kreda el Gatrun
Shindakora
Jiatena
Njimy
Khozam
Musmaje
Mubi Zarka
Birgid
Midigo
Dajo
Bulala
Debaba
Assela
Asala
Degga
Gomati
Yedi
Kuka
Kotoko
Bulgua
Margai
Sani
Tuburi
Alantika
Beia
Bang Bai
Allegad LAKE REGION
Lakes Inji Koro, Inji Kamada, Inji Mamare, Inji Manto, and 4 others lie to the South of Bang-Bai (Barth).
Lake Kosi Daba lies 50 days SSE. from Masenya; it discharges the Shari towards the N., the Bahr el Abiad towards the East (Escayrac de Lauture).
Lake Liba or Riba lies 4 weeks' journey East of the Bayong (Kölle).
The Benue is said to rise several days' journey to the SE. or SSE. of Salang (Barth).
The Bahr Kuti & Bahr Kuta are probably identicals (E.d.R.)
The Bahr Kuta is large... in Crocodiles & Hippopot... Country (Adamaua?).

# MAP ILLUSTRATING

# Dr. NACHTIGALL'S

## TRAVELS

### 1869-74.

*Chiefly from Dr Nachtigall's Maps published in the 'Zeitschrift' of the Berlin Geogr. Society and in Petermann's 'Mittheilungen'.*

By E. G. Ravenstein.

Scale 1:5.000.000.

0 10 20 30 40 50 Engl. Miles.

Dr Nachtigall's Routes. Egyptian Territory. Names of Tribes sloped.

Abbreviations. J. = Jebil (mountain); K. = kaga, E. = Emi (mountain). T. = Enneri, W. = wadi (torrent bed). Kuhar, pl. Kuhat, or Tiorda, pl. Tredat = Pool.

§ Khartum settlements ('Jaliba'), according to Dr G. Schweinfurth.

25° 30° 20° 15° 10° 5°

Selimeh. Sakiet el Med. Yaghira. Fakir el Fundi. Nile. Tagua. Zaghawa. Ez el Kaby. Abu Gurmar. Ez Elau. Khailuk. Ziadia. Dor. Anka. Mideb. J. Gheribat. Benu Jerrar.

HAMR

ZAGHA OR ZOGHAWA

ENNEDI

Arina (Tibbu). Dimi (Kid Sab). Vanyangi. Wanya. Turiegi. Bele Terra (Wia). Enneri Nobi Arâba & Shekkeba !

Dar Tama. Kube. Kodoi. Mahamid. Fea. Sungor. Kajanga. Marfi. Ali. Mayo. Dar Sula (Sula). Dajo. Simyar. Fongoro. Kordel. Taisgha. Gulla. Binga (Bina). Shala. Kara. Habanie. Dar el Birket. Am Kerdass. Birkawia. Tbeldiah. Solala. Am Majura. Dara. Kalaka. Shegga. Rezegat. Dar Nuba. Teggele. Kurondo. Jebel Gurram 1200. Abu Kerras. el Obeida.

DARFOR

KORDOFAN

Gullahomr. Gullamuffa. Nyirganye. Biringo. Ngau. Miri. Ngulu. Bongo. Oda. Mbala. Tembogo. Bolloa. Kaga Tongobo. Bahr el Abiad. Abu Dinga. Aya. Kaga Kolo. Kaga Tela. Kaga Lele. Ngafo. Ndoffa. Kaga Libanga. Kaga Baka. Banda. Wossa. Ilinda. Jitto. Deffa. Bende. Limbeshe. Marba. Kaga Bonga. Ngulu. Kumma. Drumba. Mono. Bandil. On the islands of the Kuta. (Bartsh River of Kubanda.)

BAGIRMI

Kreich. Mofrat en Nahas (Copper Mine). Kudwagah. Mangea. Yong (Yongbo). Gollo. Mera. Dem Gudy. Wille. Bessikiri. Yaffati. Solongo's. Ndoruma. Bombo's. Beland. Babukur. Tarial. Afara. Adaui. Mbomu. Mondu. Buri, Babura. Amadi. Inglimma. Kanna. Monbuttu. Mabode. Wella. Nyambara. Bagherrai. Mukaraka 1800.

Baggara el Homr. Bahr el Arab. Kuro. Tambura. Dar Fertit. Bende. Kreich. Bahr Gazal. Bahr Dembo. Bahr Tondy. Bahr Yubo. Bahr Kuta.

Jebel Marra. Jebel Kuteia. Jebel Kuteia Sirki. Jebel Kuteia Kebir. Jebel Kuteia Tundi. Jebel Kuteia Kuli. Jebel Kuteia Kuli Kebir. Jebel Kuteia Kuli Sirki. Jebel Kuteia Kuli Tundi.

*Kuta is larger than the Shari, abounds dilis & Hippopotami, & flows to the Fellata (Adamaua?). (Nachtigall)*

*The Welle flows into a Lake, and, according to Dr Schweinfurth, is identical with the Shari.*

whilst Ngama is represented by a village Ngamasa. This coincidence would almost justify us to believe that Bahr Kuti and Bahr Kuta are one and the same river, and the connection between Welle and Shari would thus be established.

Nachtigall appears to have heard nothing with respect to the lakes said to exist to the south of Bagirmi. It is just possible that these lakes will turn out to be mere "pools," numbers of which are to be found on our map. Fresnel's lake, Bahr Abiad, said to lie at a distance of 30 days' journey to the S. or S.S.W. of the Bugdi Lake, is represented on Nachtigall's map by a river of that name, and the lakes described by Sultan Teimza and Muhammad el Tunsy, as lying three or four months to the south of Dar-For and Wadai, are referred to in too vague a manner to admit of their being placed upon the map.

Dar-For has recently been annexed to Egypt, and is being explored by a scientific commission, whose labours must, in a great measure, supplant the information obtained by Nachtigall. Our map illustrates the short sketch of the conquest of Dar-For given in the *Geographical Magazine* of last January. The "Seribas" or trading-posts of the Ziber referred to there lie between latitude 8° and 9° N., and the districts brought by him under the dominion of Khartum extend thence to the frontiers of Dar-For proper. He invaded Dar-For from the south, and the Turkish Pasha, whom Nachtigall met on his arrival at el-Obeid, was able to take possession of the country without striking a blow. Some interesting information respecting Ziber's previous doings will be found in Schweinfurth's *Heart of Africa*, vol. ii., p. 360. The ruler of Wadai is described by Nachtigall as a man of intelligence and energy, desirous of entering into relations with foreign countries. It is to be hoped he will avoid boundary disputes with his new neighbours.

Dr. Nachtigall is still in Egypt, recruiting his health. The publication of his journals must be looked forward to with considerable interest, in spite of the many papers already published by him.*

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THE PARIS GEOGRAPHICAL EXHIBITION is not likely to be very complete as far as the exhibition of maps is concerned. We learn from a correspondent abroad that the French Commissioners have neglected to ask the German Government to appoint a Commissioner representing Germany, though they refuse to receive articles for exhibition unless they are forwarded through an official representative. The Berlin Government has not thought proper to waive etiquette, and make the appointment without being specially invited to do so. The Bavarians, more humble, and anxious to show to the world that they still retain some shreds of sovereignty, have not waited for an invitation; but then they have scarcely anything to show except government maps. We hope there is still time to arrange this matter, for the absence of the great German map-publishing firms would be matter for regret.

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* The more important of these have been published in the *Zeitschrift* of the Berlin Geographical Society, viz., *Tibesti and the Tibbu* (vol. v., 1870), *History of Wadai* (vol. vi., 1871), *Journey to Kanem and Borku and to Bagirmi* (vol. viii., 1873), *History of Bagirmi* (vol. ix.), *Journeys in Wadai* (vol. x.). Petermann's *Mittheilungen* contain accounts of the journeys to Tibesti (with map, 1870), and from Murzuk to Kuka (1871), besides numerous shorter communications.

# Reviews.

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## CLIMATE AND TIME.*

SINCE it has been generally acknowledged that in the northern hemisphere a glacial or icy period at one time prevailed, while in Greenland, Spitzbergen, and other parts of the Arctic Regions, now covered with ice, evergreen oaks, magnolias, and other semi-tropical or temperate plants grew in a geological period so recent as the miocene; or, extending further back into the past, that Melville Island, during the carboniferous period, supported a rank tropical vegetation, the cause of this strange change in the climate of certain portions of the earth has excited the attention of some of the deepest thinkers, and soundest generalizers of the age. Chief among these is the author of this work. For ten or twelve years past, in different scientific journals, he has promulgated his views on the subject, and these, though at first naturally opposed by the authors of rival theories, have been gradually accepted by many of the geologists and astronomers best calculated to judge of the stability of the data on which his conclusions were based. At this juncture, we think Mr. Croll has done well to collect his scattered papers, and edit them, with much additional matter, for preservation in the handsome volume now before us, the value of which is enhanced by many beautiful maps and diagrams. After an author has spent half a lifetime in making a subject his own, it is manifestly impossible, if it were just, to curtly dismiss his labours in the few lines we can devote to them. We can therefore only indicate generally the line of argument he has adopted, and refer the reader for full details to the work itself. In an introductory chapter he presents the salient points which he endeavours to make out in subsequent pages. The ocean currents in relation to the distribution of heat over the globe, the physical agencies which lead to secular changes of climate, the reason why the southern hemisphere is colder than the northern, an examination of the gravitation theory of oceanic circulation (including Maury's and Carpenter's theories), the wind theory of oceanic circulation, warm inter-glacial periods in the Arctic and other regions, former glacial periods, geological time, probable age and origin of the sun, a method of determining the mean thickness of the sedimentary rocks of the globe, the physical causes of the submergence and emergence of the land during the glacial epoch, the influence of the obliquity of the ecliptic on climate, and on the level of the sea, coal an inter-glacial formation, path of the ice-sheet in North-western Europe and its relation to the boulder clay of Caithness, north of England ice-sheet, and transport of Westdale crag blocks, evidence from buried river channels of a continental period in Britain, the physical cause of the motion of glaciers, and the theories of glacier motion, are among the subjects discussed in the volume, and present a bill of fare very tempting to the physical geographer. Rejecting the once very generally adopted theory

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* *Climate and Time in their Geological Relations: a Theory of Secular Changes of the Earth's Climate.* By James Croll, of Her Majesty's Geological Survey of Scotland. Daldy, Isbister & Co., 1875.

of Lyell, that the changes of climate which have occurred in the geological history of the globe are owing to changes in the distribution of land and sea, the learned author of the book before us is inclined to adopt, with many modifications, the views of Herschell. He points out that though no great change of climate could result *directly* from an increase of the eccentricity of the earth's orbit, yet it might do so indirectly. The deflection of ocean currents Mr. Croll points out as being by far the most important physical agency concerned in this change of climate by an increase of eccentricity. During the period of greatest eccentricity of the earth's orbit, the hemisphere winter solstice of which happened then to be in aphelion, would have its temperature so lowered that most, if not all, the moisture which fell would be in the form of snow, which the utmost intensity of the heat of the succeeding summer would be unable to melt, owing to the shortness of the season. On the other hand, when the winter solstice happened in perihelion, the winters would be mild and short, succeeded by very long summers; so that snow would year by year be accumulating in one hemisphere, while in the other there would be all the year round a mild, genial climate. Other results would follow this state of things. The trade-winds of the colder hemisphere would be stronger than those coming from that under a milder climate, and would therefore blow across the equator into the latter. This would tend to deflect the ocean currents, and Mr. Croll at great length defends those views now so well known, as being associated with his name, viz., that ocean currents are caused by the impulse of the prevailing winds of the globe regarded as a general system. Having enunciated and supported this doctrine by many, and it must be acknowledged sound arguments, he proceeds to demolish in a most ruthless manner the opposing theories of Maury and Carpenter. The theory of Dr. Carpenter is like everything emanating from his versatile and subtle mind ingeniously beautiful: but we can hardly think that anyone who reads Mr. Croll's exhaustive criticism of it (pp. 220-225), will assert that it rests on any sure foundation of fact. The overthrow of Maury's is apparently equally thorough. Mr. Croll shows that there must have been several "glacial periods," alternated with warm spells, and that the coal-beds are evidence of one of these warm periods—a view so startling that we question if it will receive such general acceptance as the rest of the doctrines broached in his work. He has laboriously calculated (by means of Leverrier's formulæ) the eccentricity of the orbit for 3,000,000 years in the past, and is thus able to fix an approximate date for the last glacial period, and also for the eocene and miocene ages.

He is inclined to refer the date of the formation of the till and boulder clay to a period extending from about 980,000 to about 720,000 years ago, and the period during which merely local glaciers poured down the Highland glens at from 240,000 to 80,000 years ago. Such is a brief account of some of the numerous important questions discussed in this work. No one—however he may be inclined to differ with Mr. Croll in some particulars, and when such questions are before us unanimity of opinion is neither to be expected nor desired—can rise from the study of this work without being convinced that it contains the results of the life study of a laborious, learned, and conscientious man, not so wedded to his own views as to be unable to do ample justice to his opponent's, nor so blind to the true end of the science of which he is so distinguished an exponent, as to forget that "the true philosopher loveth truth better than his theory." Throughout the book we have noted how anxiously he has avoided—with every temptation to an opposite course—mere hypothesis, but has endeavoured to support every statement or view by ascertained facts. To compare *Time and Climate* with Lyell's *Principles* would be to compare the "Principia" of geology with a work which has obviously emanated from a mind imbued with its mode of reasoning. But we are not saying too much when we affirm that Mr. Croll's treatise will in the department of geological philosophy which it discusses, rank alongside the great work of the dead master, will secure the reputation of its author, and add to that of the scientific department with which he is connected.

## GREAT TRIGONOMETRICAL SURVEY OF INDIA.*

THE Annual Report of the Great Trigonometrical Survey of India for the official year 1873-4 will be found to be of great interest. During the year the principal triangulation was extended over an area of 7190 square miles, the secondary triangulation over 5212 square miles, which have been closely covered with points for topographical operations, an area of 3650 square miles was operated in, *pari passu* with, but exterior to, the principal triangulation, and in an area of 12,000 square miles in the mountain-ranges north of the Assam Valley, a large number of peaks were fixed, many of which have already been found serviceable in the military expedition against the Dufflas, while topographical surveying progressed in the Himalayas, in Kattywar, Guzerat and Dehra-Dun. Of geographical exploration, much valuable work was done in Kashgaria and the Pamir Steppes in connection with Sir Douglas Forsyth's mission to the court of the Atalik Ghazi, and important additions to the geographical knowledge of Great Tibet and Nepal have been obtained through the agency of native explorers.

Turning to the various parties engaged in the operations of the survey, we must notice first that under Major Branfill. This party succeeded in revising the last bit of the southern portion of the Great Arc measured by Colonel Lambton at the beginning of the present century, and of which a revision had long been deemed essential, owing to the greater accuracy of modern instruments. The last of the old links in the great chains of triangles have thus now been made strong and on a par with the best modern triangulation. During the measurements, search was made for one of Colonel's Lambton's stations, erected by him on the highest point of some red sand-hills. Although the station was not discovered, its site was, at the remarkable distance of 1060 yards from its old

* *General Report on the operations of the Great Trigonometical Survey of India during* 1873-74. Prepared for submission to the Government of India, by Colonel J. T. Walker, R.E., F.R.S., &c., Superintendent of the Survey, Dehra Dun, 1874.

position, proving that the progress of these sand-hills, which is so irresistible as to overwhelm villages and fields in its course, is at the rate of 17 yards a year. One of Major Branfill's party, Mr. Bond, managed to get an interview with a couple of the wild folk, who inhabit the hill jungles of the Western Ghâts, to the south-west of the Palanei Hills. They are a strange dwarfish race, the man bearing a good deal of resemblance to a monkey. Their principal food is wild roots and honey, and their general condition of life most rude and primitive. Major Branfill made arrangements for connecting the triangulation of India with that of Ceylon; having previously made a reconnaissance of the Straits of Manaar with a view to select the most suitable point of juncture. This appeared to be the island of Kachi-tivu, a small coral and sandstone island, on which it will be feasible to erect two stations visible from the islands of Ramesweram and Neduven-tivu, to the west and east respectively. The angles will have to be very acute owing to the small size of the intermediate island, and Major Branfill will consequently measure these with one of the first-class theodolites of the Indian Survey. Colonel Fyers, R.E., the Surveyor-General of Ceylon, is taking great interest in the proposed operations, and everything augurs well for the success of the project, which will be further completed and enhanced in importance by the incorporation of the marine surveys of the Gulf of Manaar, now being carried out under Captain Taylor, late I. N.

In the Assam Valley the triangulation was advanced a distance of 47 miles through the forest-clad plains on the south bank of the Brahmaputra, progress being much retarded by the concomitant difficulties which have always hindered the surveyors in this region. The Brahmaputra series on the meridian of 90° was also carried northward for a distance of 54 miles, and a junction effected with the Assam series. The work of the Jodhpur series lay in the desert of Marwar and Jesalmer, which has been called "the region of death" by Greenough, a name probably suggested by its desolate appearance, the frequency of its famines, and the distress and disease generally prevalent among the poorest inhabitants, owing to the miserable food and unwholesome water on which they are compelled to subsist. Special arrangements had to be made for the provision of food and wholesome water, but camels were readily obtained, and altogether excellent progress was made by Captain Hill and his assistants, the principal triangulation being carried along a distance of 90 miles, by a series of polygons covering an area of 1552 square miles.

The Eastern Frontier Series in British Burma had been discontinued in 1870, in consequence of the financial embarrassments of the Government, but this year it was ordered to be pushed forward with vigour, with a view to fixing points for the Revenue Surveyors, who were to commence operations very shortly. Burma is thinly populated, wages are high, and the country is covered with dense forest, all of which serve to raise the contingent expenditure to about three times what prevails in India Proper. Nevertheless fair progress was made, and stations were selected for a secondary chain of triangles to connect the important towns of Rangoon and Pegu. Turning to the Madras Presidency, we observe that a useful work is being there carried out under Lieutenant Harman, the connection and reduction to a common datum of the several lines and systems of levels executed for railways, canals, and other public works, and the checking of the heights of the principal stations of the survey.

A great achievement has been made in the survey of Guzerat, by Major Haig, in combining the Revenue Survey, which had been made solely with a view to fiscal purposes, with the more accurate work of the scientific survey. It would have been a great pity if the myriads of measures which had been made for the purpose of defining the areas of all landed properties—down to the minutest fields, and which had been plotted together so as to form village maps on the large scales of 8 and 16 inches to the mile—could not have been utilised. Happily, the pains taken by Major Haig to incorporate these details into his survey have at length been successful, and he has been able to effect an excellent survey, on the scale of 4 inches to the mile, of a good portion of this rich province.

The importance of forest surveying has been now recognised in India. Captain Bailey was appointed as superintendent of the department for carrying this out, and was directed also to commence operations, under the superintendence of Colonel Walker, by surveying the Dehra Dun Forests, which are not far from the head-quarters of the Great Trigonometrical Survey. Two sorts of maps are wanted by forest officers, working or detailed maps on a large scale, so as to exhibit the greatest possible variety of topographical and other details; and general maps on small scales. The scale adopted by Colonel Walker for the first-mentioned maps is 4 inches to a mile; and the non-forest tracts in Dehra Dun are being surveyed on the same scale by Captain Thuillier, with a large proportion of native agency, by which the cost is much reduced.

Captain Baird has been observing with tide-gauges at the head of the Gulf of Kutch in order to determine if secular changes were taking place in the relative level of land and sea. Three suitable stations were discovered where the water was sufficiently deep, but there being no piers or embankments for the erection of these tide-gauges, and the construction of stagings in the sea being too costly, walls were sunk in the shore and connected with the sea by means of iron piping. Blocks of stone were sunk in the ground at short distances round each station to serve as bench marks for future references, and each of them was carefully connected with the zero of the tide-gauge. The inspection of these stations necessitated much hard work and privation. Already in May the Runn of Kutch was covered with water from 6 inches to a foot in depth, which had to be waded through by the travellers on camel back. On one occasion, indeed, the only landmarks in the last 14 miles of the journey were two small mounds of earth and the tidal observatory itself, and a curious sensation was felt by the travellers as if they were being carried out to sea, which was occasioned by seeing small branches of scrub floating on the surface of the water, and driven by the wind inland, and there being moreover no fixed objects to destroy the illusion. In the monsoon months the passage could not be made in native boats, and so a long detour had to be accomplished round the head of the gulf, and the Runn crossed at

its narrowest point. At Okha the registrations have progressed satisfactorily; at Hansal there have been short breaks owing chiefly to the deposit of fine mud in the well and piping, but at Nawanár the monsoon caused a vast amount of sand-drift to accumulate, and form a sand-pit over the line of piping, where formerly there had been 20 feet of water at low tide. This clearly proved the site to be unsuitable for continuous observations. From the preliminary results of the observations, it appears that the greatest range of the tide is from 2 to 4 feet more than the ranges given in the marine charts.

The pendulum operations were completed last summer by Captain Heaviside, and the results prove that at the ocean and coast stations there is an increase of actual vibrations over the theoretical number, and that an increase has invariably been met with in proceeding along a parallel of latitude from the main land to the ocean, and a marked decrease in proceeding up the main land to the Himalayas. This is incontestible evidence that there is a diminution of density in the strata under the earth's crust which are under continents and mountains, and an increase of density in the strata under the bed of the ocean.

The interesting narratives of an exploration of the Namcho or Tengri Nur Lake has already been noticed in our columns, and a summary of the narrative of a native explorer of his journey from Pitoragarh in Kamaun, *viâ* Jumla to Tadum, and then down through Nepal, along the Gandak River into British territory, which claims interest, will be found in the Log-Book of our present number. The most extensive and valuable geographical acquisitions, however, during the year have been made in Kashgaria, and the western portions of Eastern Turkistan, where Captain Trotter carried a survey through the Artysh Valley up to the Russian frontier, at Lake Chadyr Kul, and though he was disappointed in his expectation of being able to strike off eastwards to the Terekty Pass, and return by the road from there to Kashgar, he succeeded in satisfactorily connecting his work with that of the Russian geographers. He subsequently made a survey of the road towards Ush Turfan to the north-east as far as the Belowti Pass, 150 miles from Kashgar. Captain Biddulph also surveyed the road eastwards to Maralbashi, but no opportunities presented themselves for reconnoitring the 700 miles of the Atalik Ghazi's country eastwards. Captain Trotter afterwards surveyed the route from Yangi Hissar to Tashkurgan, and thence across the Little Pamir to Kila Panja in Wakhan, and was enabled to send a native surveyor down the Panja to Kila Wamar in Roshan, as mentioned in our number for April last, p. 118. The captain himself returned to Aktash, *viâ* the Great Pamir and Lake Victoria, and thence to Yarkand by the same route as before. One of the Hindu explorers was sent into Khotan, *viâ* Sanju, with instructions to penetrate as far east as possible. He traversed the ancient road to China, as far as the Sorghak gold-fields, then struck southwards, crossed the Kuen Lun Range and the great table-lands of the higher Himalayas on the western confines of Chinese Tibet, until he was stopped by the Chinese officials at Noh, about 20 miles north of Rudok. His work was very carefully executed, and has stood the usual tests furnished by comparing the route survey with the astronomical and trigonometrical determinations of position most satisfactorily, and this is all the more important in the present instance in that large corrections have been shown to be needed in the work of 1865-66, which has hitherto been accepted, though with some misgivings.

The computing branch of the Survey has been engaged in carefully examining and reducing the observations. The third volume of the account of the operations is ready for publication, and the fourth is all but completed; while the second, which is intended to give a brief history of the operation, and a full description of the procedure adopted, the instruments employed, and the formulæ and methods of computation by which the results have been obtained, will be finished probably by the end of 1875. Those of the synoptical volumes of results, devoted to the Great Indus Series, the Great Arc Series, Section 24° to 30°, and the Karachi Longitudinal Series respectively, have been completed, and three more volumes are nearly ready for publication.

In the Head Quarter's office of the Trigonometrical Survey, a memorial in the shape of a clock has been erected to Captain Basevi, whose life was lost through exposure incurred on high table lands of the Himalayas, while engaged in the pendulum observations. His name will thus be perpetuated among those by whom his labours must be best appreciated.

Among the various maps prepared by Colonel Walker's department, may be mentioned a map of Kumaun and Garhwal and several of the level charts, showing the systems of levels for railways, canals, and other public works. Preparations have also been made for the publication, at an early date, of a third edition of the Turkistan map, into which will be incorporated a large amount of valuable and recent information derived from the Director of the Topographical Branch of the Russian War Office, the results of Captain Trotter's surveys, and the new work of Colonel Montgomerie's Havildar, whose return to Colonel Walker's office, after an interesting exploration of Cabul and a portion of the Oxus, has by this time probably taken place.

## A GERMAN MANUAL OF SCIENTIFIC INQUIRY.*

IT cannot be denied that many of our explorers start upon their travels but ill-prepared for the task they have set themselves, and that their explorations do not consequently yield the results which might have been attained under more favourable circumstances. There are, moreover, numerous residents in foreign countries whom inclination leads to the collection of specimens of natural history, or of information respecting the country in which they dwell, and whose labours would prove more advantageous to science if their attention were directed to those points which are of real importance.

The "instructions" now before us are intended for these two classes of persons. The *Manual of Scientific Inquiry*, published by the Admiralty, has been their prototype, but the plan of the English work has been modified to suit the requirements of

* Anleitung zu wissenschaftlichen Beobachtungen-auf Reisen. Herausgegeben von Dr. G. Neumayer. 8vo., pp. 702. Berlin, 1875. (London: T. Übner & Co.)

German readers, and several branches of inquiry have been added or extended. The work is edited by Dr. G. Neumayer, the Director of the recently established nautical observatory at Hamburg, who brought to his task considerable experience in various quarters of the globe, and who has succeeded in gaining the co-operation of a body of men of mark and practical knowledge. The scope of the work will best be appreciated from a short statement of its contents.

Dr. Förster explains the methods for determining the distances of celestial bodies, with special reference to the transits of Venus; Dr. F. Tietjen explains how to observe latitude and longitude, and Dr. E. Weiss furnishes an interesting paper on the observation of celestial phenomena generally.

Hydrography is represented by the editor, who enlarges most lucidly upon all subjects of enquiry coming specially within the range of seamen, and his paper is supplemented by one on tidal observations, by Dr. C. A. F. Peters.

Prof. H. Kiepert shows how to make a flying survey, and Dr. Koner contributes a paper on geographical terminology, which may be read with benefit by all those engaged in the study of German geographical works.

The collection and preservation of specimens of natural history is exhaustively treated in a series of papers by R. Hartmann (mammals), G. Hartlaub (birds), G. Günther (fishes and reptiles), K. Möbius (invertebrate animals), Gerstäcker (articulata), E. von Martens (molluscs), and G. Schweinfurth (plants). Dr. A. Oppenheim writes on the collection of gases and other products with a view to their chemical examination.

Geology has found a worthy representative in Baron Richthofen, whose experience in nearly every quarter of the globe entitles him to speak with great authority. His contribution to this volume is supplemented by one on Seismology, by K. von Seebach, who has made that branch of geological inquiry his special study.

The claims of anthropology are most ably advocated by R. Sirchow, A. Bastian, H. Steinthal (who enters also into methods of spelling, recommending for that purpose Lepsius's standard alphabet), and Dr. K. G. A. Friedel, whose suggestive paper treats on physiological and medical inquiries. In conclusion, there are contributions by Dr. A. Meitzen, on political geography and statistics, by A. Orth, on agriculture, and last but not least, by G. Fritsch on the use of the microscope and photographic apparatus.

The tenor of all these papers is eminently practical. Theories are referred to where necessary, and the titles of the works in which they are discussed are given, but the practical requirements of the explorer and collector have been considered of paramount importance by every one of the contributors named. This is as it should be, and has made it possible to dwell upon certain subjects at far greater length than is done in ordinary text-books. Yet, in spite of every desire to render this a compact and portable work, it has assumed very large proportions; it is so bulky, in fact, as to render its transport during extended journeys a matter of considerable inconvenience.

Every traveller ought certainly to possess some knowledge of the subjects treated of in this volume, but this knowledge, in most instances, can and ought to be acquired at home, before he starts upon his journey. This applies particularly to surveying, to the use and handling of instruments, to the preservation of skins, &c. We are, therefore, of opinion, that by judicious excision and contraction a useful "Handy Book," "Remembrancer," or "*Merkbüchlein*," might be produced. Supplemented by carefully prepared maps and other information of the country about to be visited, and by a few tables, a book of this kind would undoubtedly meet the wants of a traveller actually "in the field." If Dr. Neumayer can be prevailed upon to undertake the task thus pointed out to him he will, we feel sure, meet a want felt by numerous travellers.

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ROUGH NOTES OF JOURNEYS MADE IN THE YEARS 1868-73, IN SYRIA, INDIA, JAPAN, AUSTRALASIA, &c., &c. (London: Trübner & Co.)

THE author of these pages has spent a good portion of his life in travel, and these "Rough Notes" deal with certainly not the least interesting of his experiences. It is just on this account that we cannot help regretting that a little more editorial labour has not been bestowed on them before publication. The routes described include many of the principal terrestrial and ocean highways, the experienced attention of the author notes most objects worthy of observation, and his style though familiar is entertaining, but these good points are really to a certain extent neutralized by avoidable blunders such as statements that Agra is in the Central Provinces and Malacca is in India, and more especially by the continual repetitions which have been allowed to stand. The descriptions for instance on pp. 479, 480 and 481 of the Kootub Minar and the Iron Pillar at Delhi are nearly word for word the same as those to be found on pp. 27 and 28, while the numerous similar instances which we have noticed must have contributed sensibly to swell the volume to its present bulk, that of over 600 pages; these repetitions, too, are occasionally embarrassing as in the case of two different statements respecting the population of Aden, which in one place appears as 20,000, and in others as 30,000. According to the last census, that of 1872, the population was 19,289. We must also remark that the difficulties of cutting a canal through the Paumben Pass between India and Ceylon, a problem which has exercised the best attention of men like Sir Arthur Cotton, Captain Taylor, Mr. Robertson, Sir James Elphinstone and others are, much too glibly annihilated by the author (p. 569), while his excessively severe strictures on the normal behaviour of Anglo-Indians to natives are certainly unmerited, though we do not of course deny that occasional instances of unworthy treatment of natives may have come under his observation.

Having said thus much, we must express our pleasure at the amount of interest which a perusal of the work cannot but excite. The part relating to the journey from Pekin across the desert of Gobi to Kiakhta, and thence across Siberia to Perm is especially worthy of attention. The author's companion, Mr. Grant, was consulted by the Lamas of Urga, on the occasion of their preparing for their journey into Tibet, to search for the child into whose body the soul of the Lama King or Kutuchtu had found its way, as to the best mode of proceeding. The author takes occasion to dwell upon the subject, and he may therefore be interested to learn that the young Kutuchtu was duly found, and after an adventurous journey from Lhasa entered Urga on the 30th of October last. An account of the mission will be found in our March number, p. 87.

We must refrain from entering at any length into the author's narrated experiences. Suffice it to say that he has furnished us with a book of travel somewhat above

the average, and when he deviates (as he not unfrequently does) from well-trodden paths, he often affords us instructive and entertaining reading.

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### TRAVELS IN ASIATIC TURKEY.*

HERR JULIUS SEIFF, a civil engineer of Dresden, paid a seven months' visit to the East in 1871-2. Having made a trip through Cyprus, he landed at Beirut, travelled thence to Damascus, Baalbek, and Homs; paid a flying visit to Palmyra; then proceeded by way of Hamah, and the ruins of Apamea to Aleppo, Antioch, and Alexandrette, where he embarked for Smyrna From the latter place he made an excursion into Anatolia. Herr Seiff's tour did not, therefore, extend into regions not previously described by Europeans, nor does he claim to be ranked as a scientific traveller. His volume is eminently the work of an intelligent and entertaining tourist, and he interweaves with his narrative the results of extensive reading, so as to present his readers with an instructive account of the scenes visited. His book will prove particularly interesting to those who are themselves about to undertake a similar tour to the East.

### HERR MARNO'S JOURNEY UP THE NILE.

HERR MARNO, the Austro-Hungarian *savant* attached to Gordon's Nile Expedition, arrived at Ladó, Gordon's head-quarters, on the 31st of December last. According to two letters addressed to Professor von Hochstetter and Hofrath von Becker, he appears to have had a rapid journey up the Bahr-el-Jebel, owing to the waters being very near their height. Herr Marno was well received at Ghaba Shambil (about 7° N. latitude), on the Bahr-el-Jebel, by Hassan Ibrahim, a former friend of Poncet's, and invited by him to make an excursion into the country of the Dyur and Niam-niam, as far as the home of the dwarf nation called Akkas, a young female of whom he brought for Herr Marno to see. Some male representatives of this curious race reached Italy under the custody of the late Signor Miani, but no females have ever been seen previously, not even by Schweinfurth. Ladó has been made a station by Colonel Gordon, owing to the unhealthiness of Gondokoro. This latter place stood on an eminence from 20 to 25 feet above the river which flowed at its foot. Owing to its having shifted its course westward, the remains of the river has become a stagnant and fever-breeding marsh. Marno proposes to explore to the west and east of Lake Albert, as he does not consider it beyond probability that the lake may have another outlet either at its south-west or north-west angle, while the information obtained by Colonel Long respecting the Victoria Nyanza differs so materially from that of Grant and Speke that an examination of it is also very desirable. Herr Marno concludes by remarking that since Gordon's arrival a much better understanding has prevailed between the natives and the Khedive's officers, and that they now clearly see that the latter mean well by them, and wish to buy or exchange goods with them, instead of robbing them as the slave traders habitually do.

### ERRATUM.

In the May number—Notice of Humboldt's *Natur-und Reisebilder*.

Page 148—1st column, *for* Trübner and Co., as publishers of the work, *read* F. Norgate.

* Reisen in der Asiatischen Türkei, von Julius Seiff. 8vo. pp. 534. Leipzig, 1875. (London: Trübner & Co.)

# Cartography.

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### Stanford's Polar Map.

STANFORD'S map of the countries round the North Pole extends to latitude 50° N., is neatly engraved, tastefully coloured, and embodies the results of the latest surveys and explorations. In this latter respect it certainly is superior to the "Chart of the North Polar Sea," a revised edition of which was published in October last by the Admiralty, as witness the eastern extremity of Novaya Zemlya and the northern coast of Asia. Exception may, however, be taken to the mode of spelling adopted occasionally, in which respect the author has been misled, in several instances, by the Admiralty chart. The island between Novaya Zemlya and the mainland should be called Waygat (Waaijgat) Island, and not Waigatz or Vaigat, for the name is Dutch and means "Blow gap," from the strong winds prevailing there. "Liaghoff" and "Liakhov" of the map both represent the name of the same individual, the latter being the more correct rendering. We think, too, that the adjective termination of Russian proper names should be discarded, though in this respect the author only follows the lead of many eminent predecessors. Fadeyef Island, for instance, strikes us as being more consistent than Fadeyevskoy Island. In the name of Cape Chelyuskin, this principle has been adhered to, for otherwise that cape would have been called "C. Chelyuskinskoy." These, however, are not questions of great importance, and do not affect the general correctness and utility of this map. Far more serious are our objections to the selection and arrangement of "the names of the chief Arctic worthies and the dates of discovery," which are marked in red. We should have liked to see the coasts coloured according to the nationality of their discoverers, or with reference to the date of discovery, or by a system combining both. The names now scattered over the map certainly point out the scenes of operations of a large number of Arctic explorers, but they fail to illustrate in an adequate manner, the history of discovery. Take Novaya Zemlya as an instance. We find attached to that island the names of Borough (it should be Burrough), 1556; Barents, 1594 and 1597; Hudson, 1608; Vlamingh, 1664; Carlsen, 1863; Johannesen and Mack, 1871. We miss the names of Willoughby, the first European who sighted the island in 1553; of Loshkin, who circumnavigated the whole of it, in 1760-62; of Rosmiuslof, who was the first to penetrate through Matochkin Shar, in 1769; of Pakhtusof, to whom we are indebted for our knowledge of the eastern coast up to latitude 75°, and of several other explorers of more recent times. Similar omissions occur in other parts of the map, and as this is a matter which can easily be set right in a future edition, we hope Mr. Stanford will provide us with a trustworthy historical map, illustrating the progress of Arctic discovery, when that opportunity offers.

### Maps of India.

THE new maps issued by the Indian Survey Departments since our last notice are no doubt valuable contributions to the Topography of India, but do not offer any novel feature calling for special notice.

Beginning, as usual, with the Topographical and Revenue Surveys, published on a scale of 1 inch to the mile, we have to notice the publication of a sheet of the map of Bhaugulpoor, surveyed by Captain Sherwill, as far back as 1846-9, and hardly of much interest as the results of the survey had been previously published on a smaller and more convenient scale.* The first nine sheets of a revenue map of the district of Dehra Ghazi Khan have been

* Lower Provinces Revenue Survey: District Bhaugulpoor. Scale 1 m. = 1 in. Sheets 12, 13, 14. Calcutta, 1874.

issued.* They are based upon surveys carried on in 1870-72, under the direction of Colonel J. E. Gastrell, by Captain W. Barrow, and are to be commended on account of the adoption of the modern system of spelling. The level series, carried in different directions across the country, are printed in red. The topographical map of Gwalior and Central India† has been increased to the extent of four sheets, from surveys made in 1872-73, by Lieutenant T. H. Holdich, and 64 out of a total of 101 sheets have now been published. The topographical map of the Central Provinces and Vizagapatam,‡ has had two sheets added to it from surveys by Colonel G. H. Saxton, made in 1871-2, and the revenue map of Chanda§ has been completed by the publication of the two sheets mentioned below, for which we are indebted to Captain F. Coddington's labours in 1868-70.

Amongst maps on a smaller scale that of Western Bengal‖ claims our attention first. The sheet now published comprises the Nepal boundary districts between longitude 84° 30′ and 88° E., and contains hardly more information than Major Montgomerie's frontier map noticed previously. The compiler of this map has not availed himself of this splendid opportunity of presenting us with a characteristic sketch of a portion of the Himalayan system, and in the spelling of the names he is as inconsistent as are, unfortunately, most Indian map makers. The map of Kooch Behar¶ is a mere skeleton, showing the civil and criminal jurisdictions. Of far higher value is the degree sheet of the Kattywar Survey,** published under the superintendence of Colonel J. T. Walker, of the Trigonometrical Survey. It comprises the country between latitude 21° and 22° and longitude 71° and 72°, is carefully drawn, distinguishes between metalled and country roads, shows the political boundaries, and the altitudes, as far as ascertained, as well as soundings, and follows a carefully devised system of orthography. On this map, as on nearly all others published in India, the old value for Madras Observatory is retained. This must inevitably lead to confusion, especially when there is nothing on the face of the map to indicate this fact. At all events, the example set by Colonel Walker, who gives *both* longitudes, should be followed on every single sheet of the Indian surveys published.

Of plans on a large scale those of Chinsurah Derah Ghazi Khan and Kurnal have been issued ††

## Kiepert's Handy Map of Palestine.‡‡

THIS map may be described as a miniature edition of Kiepert's Wall-Map of Palestine, noticed in the *Geographical Magazine* for February last. It contains nearly the whole of the information of the larger map, is coloured in the same manner, and sold at the remarkably small price of 60 Pfennige or 7½d.

* Punjab Revenue Survey: District Dehra Ghazi Khan. Scale 1 m. = 1 in. Sheets 11 to 19, Calcutta, 1874.

† Gwalior and Central India Topographical Survey. Scale 1 m. = 1 in. Sheets 54, 55, 56, 58, and 59. Calcutta, 1874.

‡ Central Provinces, and Vizagapatam Topographical Survey. Scale 1 m. = 1 in. Sheets 22 and 23. (New Series). Calcutta, 1873.

§ Revenue Survey: Chanda District. Scale 1 m. = 1 in. Sheet 7. Calcutta, 1874.

‖ Map of Western Bengal. Scale 8 m. = 1 in. Sheet 11. Calcutta, 1874.

¶ Skeleton Map of the Kooch Behar Division. Scale 8 m. = 1 in. Calcutta, 1874.

** Degree sheet, No. VI. of the Kattywar Survey. Scale 4 m. = 1 in.

†† Chinsurah Cantonment and Environs. 16 in. = 1 m. Calcutta, 1874.

Plan of Derah Ghazi Khan. Scale 12 in. = 1 m. Calcutta, 1874.

Kurnal, City, Civil Station, Old Cantonment, and Environs. 2 sheets. Scale 6 in. = 1 m. Calcutta, 1874.

‡‡ Neue Handkarte von Palaestina. Von H. Kiepert. Scale, 1:800,000. Berlin, 1875.

# Log Book.

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**The Duke of Edinburgh.**—H.R.H. The Duke of Edinburgh has accepted the post of Honorary President of the Royal Geographical Society, which will enable him to preside at meetings of a Society in the objects of which His Royal Highness takes a special interest.

**German Arctic Prospects.**—A deputation from the Bremen North Pole Society visited Portsmouth last week with a view to consulting Captain Nares regarding co-operation between the English Arctic Expedition and a German Expedition which may possibly be sent out next year. It consisted of Dr. Lindeman, the Secretary of the Society, Dr. Copeland, Dr. Börgen, Mr. Sengstacke, and Mr. Guthese. Dr. Copeland was astronomer on board the 'Germania,' and Mr. Sengstacke was the chief officer of that vessel during the expedition on the East Coast of Africa.

**The Port of Callao.**—Callao, the port of the capital of Peru, has undergone an extraordinary transformation of late years. Until recently there was an inconvenient and an antiquated pier enclosing a small boat harbour, and no other facilities for commerce. In 1869 a concession to construct new works was granted to Messrs. Templeman, Bergmann & Co., who made a contract in England, and in August 1870, Mr. James Hodges arrived at Callao, representing the contractors. It was discovered, on taking borings, where the foundations of a new sea wall were to be, that, instead of being on gravel, they would be on mud and soft clay about 20 feet deep, through which, at certain periods of the year, strong springs of water force themselves, highly charged with sulphurated hydrogen gas.

It is to this phenomenon that *Callao painter*, well known to first lieutenants on the Pacific Station, is due. These discoveries led to a revision of the whole scheme; which was entrusted to Mr. Edwin Clark in England. The works have now been carried out in accordance with the new plans thus drawn up. It was necessary to excavate the bed of Callao Bay to a depth of 16 feet, and to a width of 140 feet, upon the site of the sea walls. This space was then filled up with rubble stone and gravel up to within 26 feet of low-water mark, thus forming an artificial foundation upon which the concrete blocks, forming the dock walls, were built. The total length of these walls is 4520 feet, and they enclose a space of nearly 52 acres, with berthing accommodation for thirty large vessels. In addition to the dock, a long sea wall has been built, which reclaimed from the shallow water of the bay a space equal to about 13 acres. This reclamation space has been drained, and bonded warehouses will be erected upon it. The works were completed on February 11th, 1875, having been commenced in 1871. There are eighteen steam cranes on the works for loading and unloading goods, a triple line of railway along the whole length of the dock wall, a lighthouse, capstans, an illuminated clock tower, ninety-seven gas lamps, and a supply of fresh water at eight points for the use of shipping. The

total expense of these splendid works to the Peruvian Government has been 40,000,000 francs. Mr. Hodges superintended the execution of the work throughout, and was entertained at a grand dinner before his departure for England on the 17th of last March.

**An Unpublished Map of Mexico.**—Baron von Rosencranz, an Austrian officer who accompanied Maximilian to Mexico, has constructed a map of the country between Guadalajara and Vera Cruz, Tampico and Oajaca, which is based to a large extent upon original surveys. We are informed by a competent judge that this is an exceedingly fine specimen of map drawing, and of the highest value. The author has offered it to the Mexican Government, without being able to elicit a decisive reply, and his offers to sell it at Vienna and Berlin for 300*l.* have been equally unsuccessful. Our correspondent expresses a hope that so valuable a work will not be allowed to remain unpublished, and thinks a purchaser might be found in England.

**The Mean Height of Europe.**—Since the publication of Humboldt's estimate of the mean height of the continents above the level of the sea, our knowledge of altitudes has increased immensely. Dr. G. Leitpoldt, availing himself of the latest surveys and measurements, has lately calculated the mean height of Europe. His methods of calculation and the results obtained are set forth at length in an interesting pamphlet (Ueber die mittlere Höhe Europa's) published at Plauen. We confine ourselves to a notice of the principal results. These are as follows:—

| | Mean Height. feet. | | Mean Height. feet. |
|---|---|---|---|
| 1. Switzerland | 4264 | 8. Rumania | 826 |
| 2. Spain and Portugal | 2298 | 9. British Islands | 714 |
| 3. Balkan Peninsula | 1902 | 10. German Empire | 701 |
| 4. Austria | 1698 | 11. Russia | 548 |
| 5. Italy | 1696 | 12. Belgium | 536 |
| 6. Scandinavia | 1404 | 13. Denmark | 115 |
| 7. France | 1292 | 14. Netherlands | 31 |

Mean for Europe: 974 feet.

These results, certainly, are not yet final, but may confidently be looked upon as an approximation to the truth.

**The Resources of Bulgaria.**—In the *Monatschrift für den Orient*, issued from the Oriental Museum at Vienna, Herr F. Kanitz draws a most disheartening picture of the industrial and commercial condition of Bulgaria. The majority of the Bulgarians in the large towns along the Danube are traders. Priests and monks abound amongst them, but schoolmasters, doctors, and lawyers are scarce. Those on the plateaux and in the Balkan devote themselves to cattle-breeding and industrial pursuits, and the inhabitants of the fertile plains confine themselves almost exclusively to agriculture. A large portion of the fertile soil is as yet uncultivated, and until a better system of administration shall have been introduced and roads made, there is little prospect of improvement. The Maritza River, which flows through the fertile plains of Adrianople and Philipopel is navigable only for rafts, and its harbour, Enos, is allowed to become silted up with sand. The railway from Adrianople will hardly improve matters, for it is proposed to levy an export duty upon grain at Enos, and no roads connect the railway with the interior of the country. Maize is the principal breadstuff grown. The wheat of Eski-Sagra enjoys a high reputation. The cultivation of rice has been introduced from Egypt. Tobacco is grown on the Vardar and in other suitable localities. The cultivation of the vine has decreased of late, owing to the exorbitant taxes levied upon its cultivators. The manufacture of attar of roses constitutes a source of wealth to some districts on the southern slopes of the Balkan, which supply likewise walnuts to the value of 30,000*l.* a year. Crape-seed, flax, cotton, beans, onions (which are eaten in lieu of potatoes) are likewise cultivated. The Balkan is covered to its highest summits with dense forests of oaks and beaches (conifers are comparatively rare). Along its slopes there are plantations of walnut-trees, mulberries, plums (from which the favourite spirit, Raki, is distilled) and other fruit trees. The mild climate favours the breeding of silkworms. The breeding of horses, buffaloes, oxen, sheep, goats and poultry is of considerable importance, Minerals abound, but the iron-works of Samokofare are still carried on in the most primitive manner, and although there is plenty of coal and water-power, and the Bulgarian possesses an extraordinary skill in all kinds of manual work, there are hardly any manufacturing establishments. This is not to be wondered at if we bear in mind the miserable government of the Turks.

**Journey in Nepal and Tibet.**—Last year a native explorer was despatched by Colonel Walker to explore a portion of Nepal. He started from Pitoragarh in Kumaon and crossed the river Kali by means of a sling attached to a rope, having no nerve for the usual method of crossing, which consists of suspending one's self by one's hands and feet, bearing such loads as are to be borne on the chest. From this point he bore eastwards towards the town of Jumla. Slavery exists here and throughout Nepal, all castes being sold into slavery, a father having power even to sell his children, but it is reported that Jung Bahadur has intentions of suppressing this practice. At Bhajangaya and Bajru there are forts, and at the latter place a good deal of excitement was prevalent owing to the increased contingents of troops which, under Jung Bahadur's orders, each town has now to supply. The Kalakhata ridge which was passed about half way between the Parnali River and Jumla, reaches the height of 14,528 feet. Thence the ground slopes down to Chaugan or Jumla, which is rather more than 8000 feet in height. There are 300 sepoys here, besides stores of guns, ammunition and provisions within an inclosing mud wall of about 2000 feet in periphery. Here the explorer got a pass, and proceeded on in a south-east direction till he reached the Gheri River, when he followed the course of that river northward. At one place this river has high, perpendicular, rocky banks, and the natives have made a tunnel 54 paces in length through the rock. There was originally a crevice, and the rock on either hand was cut away so as to admit of a man with a load to pass through with a squeezing, the height of the tunnel not being sufficient in all parts of his going through standing. From Charka there is a direct road running north-east to Labrang-Koja on the Brahmaputra, and laden sheep, goats and horses are taken along it. At Muktinath,

which lies south-east of Charka, and is 11,284 feet above the sea, there is a holy spring of a sulphurous character, which enters a cistern from whence it flows out through 108 spouts, under each of which every devotee passes, and encircles the temple. A little distance to the south there is a crevice at the water's edge with a flame in it, which is constantly burning save when a rise in the waters takes place, when after a temporary disappearance, there is a report and the flames burst out again. Loh-Mantang is situated about 11,900 feet above the sea-level, and enclosed by a wall about 6 feet thick and 14 feet high. It is the resort of numbers of traders from Tibet and Nepal, who either exchange their goods here or take them to dispose of at Lhasa or Nepal. These traders are called Thaklis; they are of mixed origin and have the privilege of going to Lhasa and even to Calcutta for the purchase of goods. The Raja collects an annual revenue from all sources of about 10,000 or 12,000 rupees, out of which he pays 2000 or 3000 yearly to Nepal from the land revenue, and 10 per cent. of the taxes levied on goods brought across the northern frontier to the Lhasa Government. The pass between Nepal and Tibet, by which the explorer crossed, is called Photu Lá. It is 15,080 feet above the sea. The Brahmaputra was reached about 84° E. longitude, where it is about 250 feet wide and has a very gentle current, and crossed by means of yak's hides sewn at the ends, and attached to sticks at the sides which are propelled by two or four oars. At Tadum, north of the Brahmaputra, the explorer was turned back by the "Gopa," or headman, although he protested that he was a physician on his way to Lhasa, and showed his passes. He was thus compelled to return, and succeeded eventually in reaching British territory, after following the course of the Gandak River. The entire route affords us valuable topographical information respecting the little-known kingdom of Nepal.

**Obituary.**—A. G. FINDLAY, F.R.G.S. Born in 1812, Mr. Findlay had just attained his sixty-fourth year at the time of his death, which occurred at Dover, on the 3rd ult.; the sad event being accelerated, after several years of failing health, by the death of his wife, whom he survived but seven weeks. In 1844 he became a Fellow of the Royal Geographical Society, and was for many years a member of its council. His father, Mr. Alexander Findlay, was one of the earliest supporters of the Society on its establishment in 1830. Mr. Findlay's earlier years were occupied in the compilation of hydrographic maps, charts, and atlases, which are well known and appreciated. But it is to his Nautical Directories chiefly that he owed his fame, which are monuments of industry and perseverance; the first of them, the *Directory for the Coasts and Islands of the Pacific Ocean*, appearing in 1851. In 1858, at the death of Mr. Laurie, the well-known cartographic publisher, who had previously been the medium of making public Mr. Findlay's works, he took over the business, and was the means of resuscitating one of the oldest of its kind in Europe. By so doing he was enabled to carry out his designs, viz., the completion of his series of nautical directories for the whole world, and which are accepted as standard authorities in every portion of the globe frequented by the Royal and Mercantile Navies. Mr. Findlay was a contributor to the *Journal* of the Royal Geographical Society, and devoted much time to the labours of Dr. Livingstone. In Arctic matters he took a deep interest, and was a member of the Arctic Committee, and but for his infirmity would doubtless have continued his labours in the cause. Through the death of this eminent geographer, the scientific world has sustained a severe loss.

**A New Italian Geographical Society.**—We learn with pleasure that Turin has started a Geographical Society, an unmistakeable proof of the widespread interest in geographical science which is everywhere developing. It is a good sign, too, that that energetic geographer Signor Cora has been elected President for the ensuing three years.

# Correspondence.

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## EXPLORATION IN TIBET.

*To the Editor of the* "GEOGRAPHICAL MAGAZINE."

SIR,—Your interesting review of exploration in Tibet in last month's *Geographical Magazine*, and the events which have recently taken place in Burmah, will, I hope, be the means of attracting the attention of the Indian Government to the subject of frontier explorations and politics. Is it not an extraordinary thing that at the present moment there is not one single route from Scinde all round the frontier to Burmah, by which an Englishman can pass out of India, except as a member of a government mission or at the risk of his life? Is it not incredible that along the whole Himalayan range from Kumaon to Sudiya, we know far less of the routes and passes into Tibet, many of which are within sight of British garrisons, than of the routes to Lake Tanganyika? Is it not marvellous that though hundreds of officers are travelling annually all over the North-west Himalayas and Kashmir, hardly any have explored the far more interesting countries to the eastward, so great are the obstacles placed in their way both by the British and native governments and the chiefs who inhabit these hills?

Certainly there is no more rich and interesting field for travel in the world than the Eastern Himalayas, and though the hardships and discomforts to be endured are undoubtedly great; the discoveries, whether geographical, zoological, or botanical, which might be made there, ought to compensate for all the drawbacks. It surely would be well for our Government, who may be at any moment embroiled with the various semi-civilized or savage tribes of the Eastern Himalayas; to gain that knowledge of their country and character which might often avail to prevent war, or at least to make the suppression of these frontier outbreaks much easier and less costly.

Though the Nepalese have for the last forty years treated us on the same sort of footing with respect to right of way, as they would treat a deadly and treacherous enemy, and our Government has quietly submitted both to this, and to the absolute refusal of the Chinese Government to carry out the provisions of our treaty, by allowing a right of way through Tibet to China: this cannot go on for ever, and I feel sure that a different policy must some day be introduced.

As for trade, I think the importance of trans-Himalayan trade has been much exaggerated, but if there is any one product which it ought to pay to export; it is tea. It is the most important article of consumption to the whole population of Tibet, and the distance from the Darjiling plantations to the Tibetan frontier

does not exceed eight or ten marches by the present execrable route.

I have not been able to get Mr. Edgar's report on the results of his journey in 1874, but judging from what I saw when I visited the Sikkim passes, in company with Mr. Blanford, in 1870, there would be no serious difficulty in making a pony-road from the plains to the Jelep-lah, which does not exceed about 14,000 feet elevation.

If Darjiling is chosen as the starting point, a formidable obstacle is presented by the Teesta, but beyond that there are no rivers of importance to cross, and only two that would even require bridges. The distance from the Jelep-lah to Pari is not above two or three days' journey, and from there the route to Lhasa is without any serious impediment, and will compare most favourably both in distance, elevation, and facility with any of the roads to Yarkand. The other passes which I visited, namely, the Cho-lah, Tunkra-lah, Donkia-lah, and the one called Kongralama, are not only all much higher than the Jelep-lah, but much more distant from the plains, and as every day gained on this side of the passes is equal to two or three on the other, the nearest pass is the best. Now that the Eastern Bengal Railway is being extended to Jelpigoree, a road might be made from that place *viâ* Daling-fort, the Jelep-lah, and Pári, by which one might go from Calcutta to Lhasa in a month or less, and this, I believe, could be done at a trifling expense.

The reason why the Tibetans do not buy our tea now is, has I was told by a Tibetan governor himself, because the import of tea from India is strictly forbidden. That they would buy it there can be no doubt, and if the planters would take a little trouble to make it up into bricks, I believe they might dispose of all their inferior qualities, at a price much higher than they can get in Calcutta. Quantity not quality is the great point with the majority of Tibetans, and an excellent broken tea is sold at Darjiling for 4 annas per pound (tea far superior in flavour and strength to what is drunk by the labouring classes in England at 2*s.* 6*d.*). I cannot doubt that a large trade would spring up as soon as the harassing restrictions and oppression now kept up by the frontier officials were removed. Whether the road from Assam to Tibet by Sudiya is a practicable trade-route seems doubtful, but judging from the accounts of Captain Wilcox and Mr. Cooper it is an extremely difficult one at present, and the people are far more savage than those of Sikkim. My valued friend Colonel Haughton, late Commissioner of Cooch Behar, who with Major Godwin Austin knows the north-east frontier and its inhabitants as well as any one, was, and I believe is still, of opinion, that if the Government really wished it, the route to Lhasa might and should be opened, and would be quite as well worth opening as the route to Yarkand.

Hoping that matters will not much longer remain in their present unsatisfactory position, I remain, Sir, yours, &c.

H. J. ELWES.

*Misterdine House,*
CIRENCESTER.

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## DISCOVERY OF THE ISLANDS OF ST. PAUL AND NEW AMSTERDAM.

*To the Editor of the* "GEOGRAPHICAL MAGAZINE."

SIR,—Will you allow me to correct an error which appeared in your interesting review, for February last. In an article on "Amsterdam Island," page 48, I read: "Until this year it was believed that the Dutch navigator Vlaming discovered Amsterdam Island in 1696. But this year Lord Stanley of Alderley, in his *First Voyage round the World by Magellan*, edited by the Hakluyt Society, has fully established the fact that the Island of Amsterdam was discovered on March 18th, 1522, by the 'Victoria,' the first ship which ever sailed round the world," &c.

Now in the first place, the Dutch navigator Willem de Vlaming has never laid claim to the *discovery* of the island of New Amsterdam. He has visited and described the two islands, St. Paul and New Amsterdam; but, judging from his journal, he silently supposes both of them to be discovered before.

Lord Stanley of Alderley may have been the first *Englishman* who has established the fact that the northern island was discovered by D'Elcano in 1522, but this fact was not unknown to Dutch and German writers. You may find it mentioned, for instance, in the excellent work of Oscar Peschel, *Geschichte des Leitalters der Entdechungen* (1858), page 643. And, indeed, after the publication of Albo's logbook by Navarrete, it was evident that the island mentioned by him could be no other than that of New Amsterdam.

But who has discovered the island that we now call St. Paul, and who has given to both islands their name?

As to St. Paul, no Dutch navigator would have given the name of a saint to any new discovery of his; and, moreover, it is spelt in the old Dutch documents *S. Paulo*, a form they must have borrowed from the Portuguese. Now, which of the two islands bore this name? Some light on this matter is spread by an interesting article written by Captain P. A. Leupe, of our State Paper Office, *(Ryks-frihief)*, and published in the Dutch *Nautical Magazine* for 1866.* We learn from it that before 1610 the Dutch ships going to India made their way around the island of Madagascar. In that year, however, they sailed for the first time from the Cape of Good Hope directly eastward to the meridian of 36°, and as they made in this manner a much shorter voyage, the Dutch fleets pursued from this time generally the same track. On this track they could not but find sooner or later the islands we speak of. And, indeed, from the documents collected by Captain Leupe, we learn that in 1617 both islands were seen by different ships; the southern island, to which was given the latitude of 38° 40′ by the ship 'Zeewolf' (Seawolf), Skipper Havick Claesz; the northern island by the ship 'Tertolen,' Skipper Adriaen de Wale, who determined its latitude in 37° 40′. The names of both ships were given to the islands, but they did not last. In official documents of 1619 we still read "St. Paulo or Zeewolfs Island"; but on another occasion, in the same year, only St. Paulo. However, it is not always clear which of the two islands is indicated by this name, and the same uncertainty reigns in later documents till 1633.

In 1633 Antonio van Diemen, the same who, as Governor-General, sent Abel Tasman on his voyages of discovery, sailed to India, and saw, on June 17th, as we read in his journal,† to the south, the island of St. Paulo, and, shortly after, to the north, another island, "to which," says he, "we have given the name of New Amsterdam." He sailed between the two islands and determined their positions to be latitude 38° 35′ and 37° 50′.

The journal of Van Diemen was not made public, otherwise the names of both islands would from this time have been fixed. But the contrary has been the case. Captain Leupe has found on old Dutch manuscript maps the islands called as by Van Diemen. On the printed maps, before De Vlaming, however, it is otherwise. On a map of Nicolas Visscher (Piscator) of 1652,

* *Verhandelingen en Berigten Cetreffende het Zeewezen*, &c., published by Jacob Swart, 1866, page 221 and *et seq.*

† An abstract of the journal regarding this discovery has been published by Mr. L. C. D. van Dyk in the Dutch journal, *Konst-en Letterbode*, for 1854 (pp. 158, 191), with a view of the two islands after the original drawing.

the first on which I find the two islands, the *northern* is called St. Paulo, the *southern* New Amsterdam. So, likewise, on the charts of the world, published by Johannes van Keulen before 1688 (in four sheets), and by Hugo Allardt about 1690 (in four sheets), and on the map of De l'Isle, "dressé sur les observations de Mess. de l'Académie des Sciences."

In 1701 the journal of William de Vlaming was published. We know that he retained the names as given by Van Diemen, and now they are also changed on the printed maps. The northern island bears from this time the name of New Amsterdam, the southern that of St. Paulo. So on the Dutch charts of Johannes Lootz and others, on the maps of De l'Isle of 1720 and 1724, those of D'Anville, &c. Even on an English map by Herman Moll we find the same nomenclature.

From the foregoing facts it would appear that the Dutch navigators did from the beginning regard the southern island as that discovered before them by the Portuguese, and to which the latter had given the name of S. Paulo, and as they knew nothing of the discovery of D'Elcano, they imagined the northern island as discovered by themselves.

P. A. TIELE.

LEIDEN, *May 8th*, 1875.

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## THE NORTH-WEST AFRICAN EXPEDITION.

*To the Editor of the* "GEOGRAPHICAL MAGAZINE."

SIR,—Mr. Skertchly's communication on an expedition about to start for the purpose of exploring the Western Sahara cannot fail to interest geographers, though its results must certainly cause disappointment to its sanguine originators. Mr. Skertchly presumes that the greater part of this Western Sahara consists of a depression many feet below the level of the sea, which communicates with the Atlantic by means of a valley opening opposite the Canary Islands. He refers to Barth, Caillé, Panet, Riley, and other travellers in support of so startling an announcement, and tells us that Mr. Brion has prepared a relief model (of "plastic" clay, I presume), by which it can be seen at once that El Juff is a natural depression, into which the Atlantic waters would at once flow if the sand-bars at the mouth of the "Belta" (Wadi Dra'a) were cut through. I do not for a moment doubt the possibility of El Juff sinking below the level of the sea. A depression of this kind is already known to exist to the south of Algeria, which it has been proposed to fill with water from the Mediterranean, at an estimated expense of 3,000,000*l*. The oasis of Jupiter Ammon offers another example of the same kind; but before a similar assertion can be made with respect to El Juff, or any other portion of the Western Sahara, it will be necessary to observe a few altitudes. Neither of the travellers named has done this, nor do their works, as I read them, justify Mr. Skertchly's sweeping assertion. That, which he appears to include in his future inland sea, lies actually at an elevation of 340 feet above the sea, and in order to reach El Juff, either from Tuat or from the Wadi Dra'a, it is necessary to cross a broad belt of hills, probably a freshwater formation of pliocene age, as in the case of a similar belt to the south of Algeria.

The prospects of an extensive commerce held out by Mr. Skertchly are equally delusive. The "enormous mineral" wealth of Tafilet and Tuat is limited to a little saltpetre and alum, whilst Bambara and Hausa are as readily accessible now by means of the Senegal or Niger as they will be when the proposed inland sea shall have been formed.

R. F.

# Proceedings of Geographical Societies.

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## ROYAL GEOGRAPHICAL SOCIETY.

*Meeting of 26th of April*, 1875.

### TIBET.

THE PRESIDENT, SIR HENRY RAWLINSON, took the chair at 8.30 P.M. The paper read was "Travels in Great Tibet and Trade between Tibet and Bengal," by Clements R. Markham, C.B., which appeared *in extenso* in our last number (see page 129). In the discussion which followed the reading of the paper—

Colonel T. G. MONTGOMERIE said that for some time the officers of the Trigonometrical Survey in India were employed in the north surveying the frontier, and naturally the great regions beyond attracted their attention; but the Government of India were anxious that nothing should be done to endanger those connected with the Survey. The officers, however, endeavoured to acquire as much knowledge as possible of the countries beyond the mountains, and it became known to him personally that the longitude of Yarkand was not what it had been represented by Humboldt, and in the great surveys connected with China. Consequently, when the survey on the frontiers approached completion, arrangements were made for carrying on explorations beyond. One man was sent to Yarkand. He made a route survey, and succeeded in fixing the position of that place. His figures had since been tested by European explorers and skilled observers, and were found to be correct. The next step was carried out by Mr. Johnson, who was employed on a survey close up to the frontier at various heights, from 15,000 feet to 22,000 feet above the sea. He crossed the Kuen Lun range, and was the first European who had succeeded in passing from the plains of the Punjab to the basin of Eastern Turkistan. He found the Himalayas to be 400 miles in width at apparently their narrowest part. It was then found impossible to employ Europeans to make the explorations that were desired, and a number of natives were therefore trained to do the work. When he (Colonel Montgomerie) required some one to make a journey into Tibet, he selected a man who was either a semi-Tibetan, or had friends who were in the habit of travelling in that difficult country. Such a man was regularly trained to observe the stars and to make route surveys, and he was then sent out upon a trial trip over ground of which the maps had not been published, but existed in manuscript, so that his work could be tested. After several such trials, if his results were correct, he was sent into unknown territory, starting from one known point and closing upon another known point. If he performed that journey satisfactorily he was given charge of a longer expedition. The chief Pundit, who had been referred to in the paper, carried a route survey down the whole length of the Tsanpu River. Up to the year 1863 the upper waters of many of the large rivers of India were still unknown. A considerable portion of the Indus was unknown. Neither was it known how the Brahmaputra or the Kosi ran. A great deal had since been done, but much still remained undone. The upper course of the Indus was now known, but a portion, about 180 miles had not yet been traced. Still greater ignorance prevailed about the last 350 miles of the Brahmaputra, for it was not certainly known whether the Tsanpu was really the Brahmaputra or not. Although the head waters rose almost in British territory, and the river flowed through British territory, there was still an unknown portion of about 350 miles. Explorations had now been carried on throughout every part of the frontier of India, from Kelat to Kabul, then across the Hindu Kush, down to Faizabad, up the Oxus, across the Pamir Steppe to Kashgar, from Kashgar to Yarkand, round to

Rudok, and down to Lhasa. Only a few days ago he heard of the return of the chief Pundit, who had been lately in Eastern Turkistan. He had crossed over from Ladak by a northerly route, passed through a succession of gold-fields, came down upon the Brahmaputra at Shigatze, travelled down the river for some distance, and came out in Assam, passing through Towang. Now that the Geographical Society threatened to make an end of Africa, and the Arctic regions were likely to be thoroughly explored before long, there was nothing left for them but the happy hunting-ground to the north of India. If any enterprising gentleman wished for a trip in a Rob Roy canoe, he might put himself on the Brahmaputra, near the Mansarowar Lake, and pass down through the length of Middle Tibet. He would thus have an opportunity of exploring the unknown 350 miles. The large district extending from Lhasa to Kashgar, and from Kashgar across the desert of Gobi, right away to China, was still an unknown land, and offered a large field for future geographical enterprise.

The PRESIDENT reminded the meeting that geographers were very much indebted to Colonel Montgomerie for having originated the institution of native explorers, which was one of the most valuable agencies for the acquisition of geographical knowledge that had ever been established in India. With reference to the suggestion that some one should descend from Lhasa to Sudiya in a Rob Roy canoe, it must be remembered that in a short space of 300 miles the river falls 10,000 feet. No doubt there were some tremendous rapids and cataracts in that interval, so that it was by no means certain that a canoe would reach Sudiya in safety. He, however, echoed Colonel Montgomerie's hope that the routes would be explored. But there were other questions than those of mere geography connected with this subject of Tibet, such as that of the trade railways between India and the countries conterminous with it on the north-east; and the Society was fortunate in having present two ex-governors of Bengal, Sir George Campbell and Sir Cecil Beadon, who had carefully studied the question of trade routes.

Sir GEORGE CAMPBELL said, although Mr. Markham had not travelled in Tibet, his enquiries at home had been as effectual as the work of many travellers. It was a remarkable instance of what might be done by energy and zeal, for he had succeeded in unearthing narratives of travel which had remained unknown for nearly a hundred years. Something was previously known of Captain Turner's journey to Tibet, but of Mr. Bogle's journey, all that we knew was that it had been made. It was supposed that the record of it had been entirely lost, but it now appeared that it had been kept, and would now be given to the world. At the same time Mr. Markham had obtained the history of a journey by another traveller, Manning, in 1812, of whose very existence most Asiatic geographers were absolutely ignorant. He thought hardly sufficient attention had been paid to the very minute and particular account of routes between Lhasa and China, which was furnished by the French missionaries, Huc and Gabet. It was sometimes the fashion to discredit their statements, because they were, no doubt, a little credulous about the stories that were told to them; but he had read not merely the short English abstract of their travels, but a much fuller French edition, and compared it with the information which had since been obtained, and the impression left upon his mind was that as regards the facts that came within their own observation, their accounts were most reliable in every way. They were not scientific men, but they gave correct descriptions of the routes they travelled from the north of China to Lhasa, and from Lhasa to Southern China. Considering the precise information which those missionaries afforded, and the results which had been obtained from the journeys of Colonel Montgomerie's natives, it might now be said that a very good knowledge was now possessed of the geography of the routes between India and China by way of Tibet. He had taken great interest in the subject of trade between India and Tibet, and believed that the Tibetans themselves had really very little objection to trading with the English, the difficulties that were placed in the way arising solely from political considerations on the part of the Chinese. Englishmen knew something of protection and monopoly, and it, therefore, was not very unnatural that Chinese protectionists should insist on protecting their trade in tea. It had been said the want of enterprise on the part of British tea-growers was so great, that the Chinese tea was brought down for sale over the hills to the British dominions, but that was a mistake. In Bhutan, Sikkim, and Kashmere, brick-tea was still sold in small quantities, but that arose simply from the habits and customs of the people. For certain ceremonies brick-tea was regarded as necessary, and must be had, whatever price was paid for it. Assam tea had entirely superseded Chinese tea in all the countries to which it had access, but the Tibetans had placed an embargo upon it, and until that embargo was removed, Assam tea could not find its way across the hills. It appeared to him that however much was learnt of the Towang route, there could be little doubt that the route by way of Darjiling was clearly the best. A road might be made, as he hoped it would, into Sikkim, and so into the frontiers of the Chubi Valley, which was the outlying post of the Tibetans, running between Bhutan and Sikkim; but Europeans, and even Hindoo and Muhammadan merchants, were not allowed to enter by that route, being compelled to go round by way of Nepal. He could not greatly wonder at the exclusiveness of the Chinese and Tibetans, for they had got into trouble on many occasions when they had admitted Europeans into their country; but that repugnance must be overcome by great consideration being shown towards them, and by not attempting to back up every European adventurer, whoever he might be, who tried to penetrate into the country. Full and equal justice should be done to the inhabitants, so that when a man went among them and behaved in a manner that was creditable to the British nation, they might receive him without fearing that another who might be violent and unjust would be supported in his violence and injustice. The Tibetans and Bhutans were active and good traders, and the only difficulty in the way of facilitating intercourse was the political one. As long as the British in India were a distant power the Tibetans were not afraid, and permitted free intercourse to take place; but since so many states had been absorbed, and the British power had come close to them, they were naturally a little afraid, and pursued the policy of keeping the English at arm's length. They would not even carry on any correspondence with the English, and returned unopened any letters that were sent to them. When the softening influence of a just and considerate policy had reached the Tibetans, and diplomacy had produced an effect upon the Chinese, no doubt a very considerable trade would be established, and residents in India would be able to take pleasant and healthy trips beyond the Himalayas. Now that so many difficulties had been interposed in the way of communication with China in another direction, it was very important that every effort should be made to open the route between the eastern extremity of the Assam Valley and Batang upon the frontiers of China and Tibet. During his administration of Bengal he had occasion to draw a good deal closer than formerly the intercourse with the tribes occupying the hills, who had become much more amenable than they used to be. So far as those tribes were concerned, he believed there would be no real difficulty in establishing a communication with Batang. There again the only difficulty was the political one. If that could be overcome, the trade might easily follow the course of the Brahmaputra proper, and so reach the great province of Szechuen, and perhaps open a way for Chinese emigration into the tea-

districts of Assam, which were perhaps the best in the world.

Sir CECIL BEADON entirely concurred with Sir George Campbell in the praise he had given to Mr. Markham, for the extremely interesting paper which he had read. When he (Sir Cecil Beadon) was in Bengal, one or two attempts were made to explore the Brahmaputra, so far as it was practicable, by means of steamers and boats, and on one or two occasions considerable progress was made in going up that branch of the river called the Diing; but at no great distance above Sudiya it was found to be so exceedingly rapid, and the course so much contracted, that the steamers were unable to stem the current, and the attempt was given up. Between that point and the Towang route the countries bordering upon the valley of Assam were entirely in the possession of semi-savage tribes, with whom our relations are not of a very satisfactory nature, and through whose territories he was not aware that any pass had ever been explored by any European. Through the Towang Pass there was a considerable trade direct from Tibet, and that trade, he believed, had never been interrupted. It was not, however, open to Europeans, being entirely confined to the Tibetans and the Indian traders who went up the valley of Assam. By the treaty which was concluded with the Bhutanese after the campaign of 1864, a small portion of the Hill territory, was transferred from Bhutan to British India, and a military station was formed there. The natural route, however, was that to which Sir George Campbell had referred, up the valley of the Tista, below the Great Darjiling spur, to the pass which led into the valley of the Chumbi. That was the route which commerce had followed for ages, but Europeans were not allowed to penetrate into Tibet by that route. When he was in Bengal an attempt was made to carry a road up the valley of the Tista as far as the pass which separated Tibet from the newly-acquired territory of Bhutan, but very little progress was made. Whatever was done it was not probable that the trade between Bengal and Lhasa would ever assume very large dimensions, for the heights of the passes, probably not less than 18,000 feet, and the extremely steep ascent on the south side, would require a very large expenditure indeed to make the route practicable for anything but pack-animals. When he was at Darjiling an effort was made to establish a fair in the neighbourhood of the station, and some little traffic between the traders from the plains and from Tibet took place; but although apparently there was no objection on the part of the Tibetans to resort to the fair, the trade did not prosper.

Sir RUTHERFORD ALCOCK agreed entirely with Sir George Campbell as to the best route by which to communicate with Batang and China. No geographical difficulty was interposed by that route, and it was only political jealousy that prevented a considerable trade springing up in that direction between the plains of India and Szechuen. Wherever Europeans penetrated in the East trouble almost invariably followed, more especially in connection with China, which had already had three wars with England. It was not therefore to be wondered at that great difficulties should be placed in the way of our further advance. Patience and forbearance must be exercised, and no doubt in the end a communication would be established that would be beneficial to both places.

Mr. W. H. JOHNSON, the traveller who crossed the Kuen Lun into Khotan in 1866, was then introduced to the Meeting by the President. He thanked the President and Colonel Montgomerie for the honourable mention they had made of his services in connection with the great Trigonometrical Survey of India, and hoped that many explorers would ere long be found to visit the great country which Mr. Markham had so ably described.

The PRESIDENT said that for many years past Mr. Johnson had been Commissioner for the Maharajah of Kashmere in Ladak; and in fact, was the Governor of that district. In that capacity he had rendered most important services to the British Government in facilitating the transit of Mr. Forsyth's mission, and later still Mr. Shaw's mission. His services had been very highly spoken of both by the officers concerned and by the Government. He was at present in England on leave, and was about to return to Ladak, where it was to be hoped he would continue his geographical labours, and occasionally send home such information as he was able to collect with regard to that very interesting country to the east of Ladak, where the gold-fields existed, but regarding which very little was at present known.

### AWARD OF MEDALS.

In conclusion, the PRESIDENT announced that the Royal Gold Medals of the year had been awarded to Lieutenants Weyprecht and Julius Payer, for their explorations and discoveries in the Arctic Sea, between Spitzbergen and Novaya Zemlya. It was an unusual thing to give two medals for one expedition, but Weyprecht and Payer were *par nobile fratrum*, and it was impossible to dissociate one from the other, both being commanders, the one of the nautical, and the other of the land operations. He hoped that they would be able to be present at the Annual Meeting in person, but if they should be unable to attend no doubt the Austrian Ambassador would take charge of the medals in their name. The Public School Examinations had also been concluded, and Eton had again been victorious in both departments.

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## IMPERIAL RUSSIAN GEOGRAPHICAL SOCIETY.

AT the meeting of the 2nd (14th) April, M. P. Semenof, vice-president, being in the chair, the collection of Khivan jewellery destined for exhibition at the Paris Geographical Congress was open to view.

The SECRETARY announced that the Council had resolved to exchange publications with the provincial statistical committees, whose reports are most valuable authorities on the national resources, and nevertheless are seldom found in public libraries. The plan for a Siberian series of levels had been approved, and operations would start from Zverino Golovskaia, the easternmost point reached by the system of triangulation, in the direction of Irkutsk. Five parties will be employed under the direction of M. Moskof, who was engaged on the Aralo-Caspian Expedition, and M. Muller who has recently returned from the Olenek.

The SECRETARY also mentioned that the first number of the *Bulletin* for 1875 was ready for issue, and that an ethnographical map of Russia would be laid before the Society at its next meeting. He then furnished some intelligence respecting M. Sosnofsky, who is endeavouring to make his way from China to the Black Irtysh River in Siberia. This traveller, after experiencing great kindness from the Chinese authorities, finally left Hankow on the 11th of December. He hopes to reach without hindrance the province of Kansu, the Tungan insurrection being now quelled, and Chinese authority re-established in that part of the empire. He is however uncertain as to the route he will thence pursue, whether to go by way of Uliassutai, on to Barnaul or to Guchen and Bulun-togai. This news had been communicated to the Society by M. Veniukof, who also furnished some particulars respecting a newly-executed marine survey of the coast of Eastern Siberia, along a stretch of 450 versts from the Imperial Harbour to Plastun Bay. Some astronomical position and levels had also been determined in the same region, and the results sent to St. Petersburg by M. Bolshef. A survey of the mountainous district where the Chatkal(?) and Angren(?) rise had also been made by the military topographers of the Turkistan province, thus filling up a blank in the map of Central Asia.

After the Secretary had finished his report, M. Sievertsof gave an account of his explorations of the

Aralo-Caspian Steppes in 1874, and Baron Kaulbars exhibited a map of the Khivan oasis, giving, at the same time, a description of the agricultural system of the country as well as a short account of the density and distribution of the population in the delta of the Amu Daria.

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## BERLIN GEOGRAPHICAL SOCIETY.

### POPULATION OF CHINA.

BARON VON RICHTHOFEN has communicated some important remarks to the Berlin Geographical Society's *Proceedings* of the 2nd of January, on the subject of the population of China. Our readers may remember that that well-known Chinese traveller the Abbé Armand David had estimated the total population of the empire at three hundred millions, observing at the same time, that he could not at all understand Baron Von Richthofen's estimate of their numbers being as low as one hundred millions.* The Baron says that this representation of his views is erroneous, and that his experience has always tended to confirm the accuracy of the Chinese census. He observes that there are three ways of testing the correctness of their enumeration; firstly, by a consideration of the system adopted, secondly by the degree of probability attaching to the rate of increase brought to light, and lastly by testing the population of particular districts with those given by the census. The method of procedure in the census is as follows:—Tables are hung outside every house on which are inscribed the names of all its members, present and absent. By means of the overseers of a hundred houses, and a gradation of superior officials, the work would become simply one of addition, were no check introduced. This, however, is done every five years by certain officers who compare the statements of the *monn-pai*, or tables, with the actual number of inhabitants as seen by them. The avarice and venality of these officials, however, introduced elements of unreliableness, which either exaggerate or diminish the actual numbers according to what the object of the census may be.

Until 1711 the ostensible object of the census was the levying of a poll-tax, and the drafting off the inhabitants between the ages of sixteen and sixty, to forced labour, and a percentage of them to military service. That the officials did not neglect this opportunity for extortion is apparent from the fact that the office of census-taker was farmed out, and found ready bidders. Their direct interest being in making the numbers as low as possible, it cannot be wondered at, that the totals before the year mentioned in which the poll-tax was changed into a land tax, were low, fluctuating as they did between seven and a half to fifty or sixty millions, compared to those after. Even then the practice of drafting off the men for state labour still prevailed, and neutralized the good effect of the other change. But gradually the efforts of the rulers to obtain accuracy began to bear fruit, spite of the faulty system. Baron Von Richthofen considers the argument that the Chinese wished to vie in point of numbers with other States a fallacious one, as till lately they had no standard of comparison to look to, except their own previous censuses; secondly, because their other statistics show no such exaggeration; and thirdly, because the gradual increments are in a ratio founded on laws which even the Chinese could not have invented.

In 1749 the population was reckoned at 177 millions, but as it is clearly impossible that accepting the numbers for 1711 as twenty-eight millions, there could have been so tremendous an increase in the time, Baron Von Richthofen considers that we may assume that the depreciatory causes mentioned above were at work at the earlier period, and that adopting the same rate of increase as took place later, the real population of 1711 amounted to about 100 to 120 millions. In 1783 it rose to 284 millions; in 1812 to 362 millions; and Sacharoff arrived at the calculation, from an examination of the official archives, that the numbers for 1842 amounted to 415 millions. These estimates the Baron considers approximately correct. The rate of increase in the provinces corresponds fairly with that for the whole empire.

Taking all facts into consideration he inclines to the belief that the present population must amount to 420 millions. This calculation allows for the ravages of the Taeping rebellion and the Muhammadan insurrection, as there is no doubt that the total given for 1842 (415 millions) was considerably below the mark. It would be very interesting to ascertain the particulars of the censuses since 1842, as tending to throw light on the alleged decimation caused by the use of opium, and on questions connected with Chinese coolie emigration.

* See *Geographical Magazine* for August 1874, pp. 213.

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## TURIN GEOGRAPHICAL SOCIETY.

AT the meeting of the 11th of May, the felicitations of the Patron—the Prince of Savoy—Carignano to Signor Cora on his election were read, and several geographical announcements were made, among others that Dr. Nachtigall, who was in Rome, was about to read a paper on his recent explorations before the Italian Geographical Society. Signor Cora is also preparing a paper for the Cosmos on the same subject, accompanied by an original map. Captain R. F. Burton recently passed through Turin, on his way to England, and had informed Signor Cora that he was engaged in preparing a new work on the Congo, and that his work on Iceland was passing through the press. The Captain also mentioned that during his sojourn at Trieste he had made some important pre-historic researches and discoveries along the Adriatic Coast.

The PRESIDENT then stated that an Italian Expedition under the guidance of the Marquis Horace Antinori would shortly leave for Tunis. Military and naval officers, naturalists and photographers would be attached to it, the chief objects being the examination of some ancient Roman monuments in Northern Tunis, and a survey of the isthmus of Gabes so as to throw additional light on the possibility of creating an inland Sahara Sea. Other news were touched upon by the President, including the preparations of the English Arctic Expedition, in alluding to which Signor Cora paid a high compliment to the qualifications of Captains Nares and Markham. He made mention of a Dalmatian traveller, who shortly leaves for the East Indies, and who will be commissioned by the Society to devote his attention to certain geographical points of interest. The evening concluded with the election of the following gentlemen as honorary members, The Right Honourable Sir Bartle Frere, K.C.B., Major-General Sir H. C. Rawlinson, K.C.B., C. R. Markham, Esq., C.B., Captain R. F. Burton, and Baron Von Richthofen, and of ten other gentlemen as ordinary members.


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